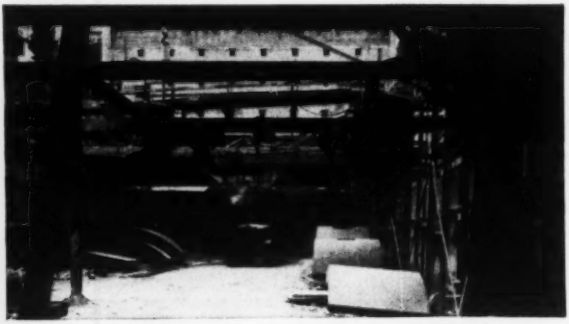
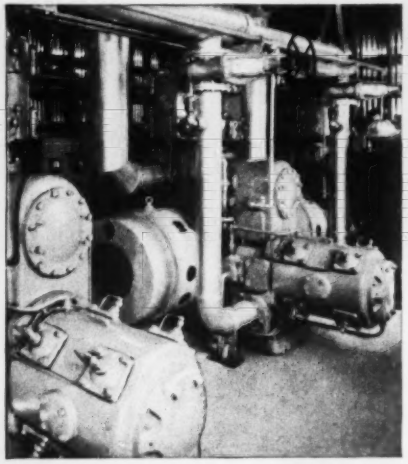
ENGINEERING NEWS-RECORD

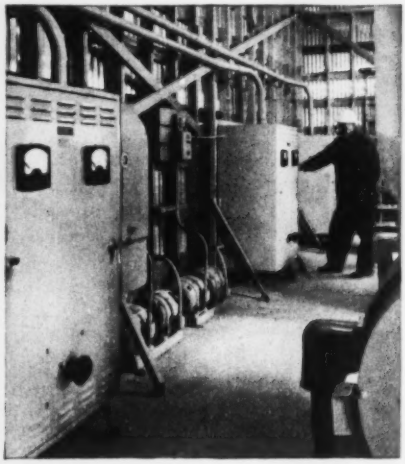
A McGRAW-HILL PUBLICATION

San Francisco's new twin-bore tunnel will be 3400 ft long portal-to-portal with a 1600-ft enclosed bore. Air for the construction tools and equipment is distributed from a central source under 100-lb pressure through 6-in. pipe





A G-E 150-hp 440-volt, 600-rpm synchronous motor drives each of the three 930-cfm Ingersoll-Rand compressors. Motors and compressors run 24 hours a day, five days a week



G-E control for each motor consists of a semi-magnetic starter providing reduced-voltage starting and complete motor protection. G-E motor-generator sets supplying field current are controlled by G-E magnetic starters mounted above them.

AIR for BOTH TUNNELER AND TRAVELER ... *Electrically*

G-E motors and control drive compressors for construction equipment and permanent ventilating blowers at San Francisco's Broadway Tunnel

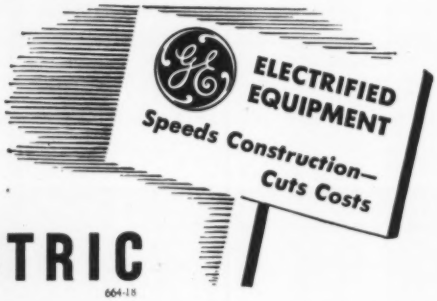
Compressed air to operate the more than 100 tools, hoists, and muckers being used by the Morrison-Knudsen Construction Co. in work on San Francisco's Broadway tunnel is supplied by centrally located compressors driven by G-E motors and control. Used in place of numerous individual units, the central air supply cuts maintenance costs and adds flexibility to the tunneling operation.

Expressing complete satisfaction with the system, Assistant Project Manager Harry Kirmond reports outstanding performance from G-E drives: *no unscheduled downtime has been charged to the drives up to the halfway mark in the two-year project.* And when the tunnel is complete, G-E equipment will still be on the job in the form of ventilating-equipment drives, and complete distribution facilities for lighting.

This is another excellent example of the flexibility, speed, and economy that G-E electrification can give you on construction jobs. ***General Electric Company, Schenectady 5, N. Y.***

Ask him Today!

Whether you buy or build construction equipment, your G-E representative can show you how to do a better job—at lower cost—by complete electrification. Write him now, and he'll call on you at your convenience.



GENERAL ELECTRIC

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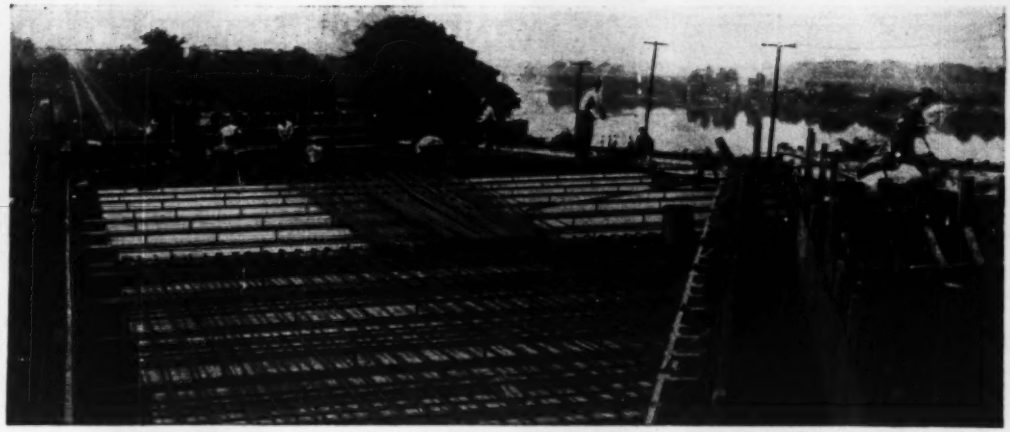

Network of Bethlehem Reinforcing Bars in deck of highway bridge over Lehigh Valley Railroad near Pittston, Pa.

New Bridge on Pennsylvania's Route 5

One of many relocation projects recently carried out for the Pennsylvania Department of Highways was a short stretch of Pennsylvania's Route 5, between Port Blanchard and Pittston, Pa. The job involved the construction of a two-lane bridge, plus approaches, to carry traffic over tracks of the Lehigh Valley Railroad. The new structure, shown in the accompanying photographs, was built adjacent to a narrow, outmoded bridge. Contractor: Wagner Construction Co., Kingston, Pa. Bethlehem furnished bridge reinforcing, bar mats, and dowel units.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

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Dowel Units • Reinforcing Bars • Bar Mats • Guard Rail
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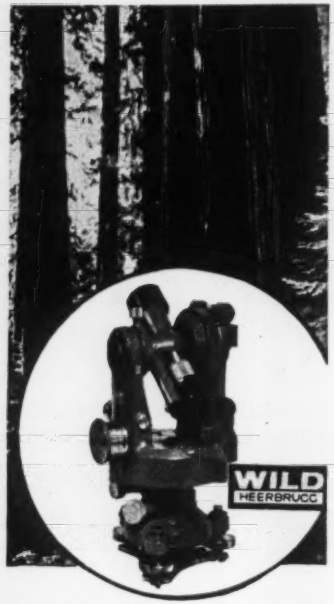
BETHLEHEM STEEL

Rigged with heavy wire rope, crane lowers bucket of concrete over bridge form.

General view of construction, as seen from caboose. Form at right is readied for pour. Narrow, outmoded bridge is visible at far side of form.

Workmen place Bethlehem Hinged Bar Mat over first course. Bethlehem Dowel Unit, designed to minimize load-transfer problems, is shown in foreground.



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ENGINEERING NEWS-RECORD

ABP Member ABC

Volume 147 SEPTEMBER 6, 1951 No. 10

WALDO G. BOWMAN
Editor

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"WELL PLEASED with PERFORMANCE"

says Onuparik of his TOURNAROCKERS

Relocation of a bad stretch of Connecticut State Hwy. 109 near Thomaston gave Fred Onuparik Construction Company of New London an excellent opportunity recently to check performance of 2 rear-dump C Tournarockers in highly restricted areas.

Here are actual job figures:

Hauling an average distance of 250 ft. one-way over narrow haul roads, the two 16-ton Tournarockers easily handled shovel output of 1200 yds. of rock per 9-hour shift. The "C's" short turn radius (14') and independent power steer were a decided advantage in speeding cycle time on the 55,000-yd. job. "Very well pleased with Tournarocker performance!" is the way Owner Fred Onuparik puts it . . . "The best hauling units I've seen in limited working areas," adds Master Mechanic Phil Onuparik.

98% efficient over 1000 hours

Besides their extreme mobility on narrow roads and in restricted turn-around and loading areas, Tournarockers showed several other major advantages which Onuparik liked, too. First, the two rigs operated with virtually no downtime . . . in over 1000 hours, they were 98% efficient. Second, the "C's" cut normal travel time between jobs . . . making the 45-mile trip through congested traffic from a completed road-building assignment at New Haven to Thomaston . . . and later, 72 miles from Thomaston to New London.

On the job, or driving job-to-job, Tournarocker's fast, rubber-tired mobility paid off for Onuparik Construction Co. in a big way. You, too, will like the production and economy these job-proved rigs will give hauling rock or sand, on steep grades or in restricted quarters. Your LeTourneau Distributor is ready to tell you more about the *new* 18-ton "C", as well as 9, 35 and 50-ton Tournarockers.

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HIGH-SPEED, RUBBER-TIRED EXCAVATING • HAULING • LIFTING EQUIPMENT

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exactly fitted for their work

When we say "exactly fitted" we mean a construction tire built for the toughest conditions OFF THE ROAD, while giving a smooth long-wearing roll on the highway.

This *off-the-road* and *on-the-road* problem has now been solved. Both construction requirements have been fully met and mastered.

These are the facts about the U.S. ROYAL FLEETMASTER which can contribute to a radical reduction in your tire costs.

These U. S. Royal Fleetmaster facts add up to *reduced tire costs — increased efficiency — lower maintenance!*

- ★ ***70% Deeper Traction Tread!*** (For complete holding penetration OFF THE ROAD! With long-wearing smoothness on the *highway*)
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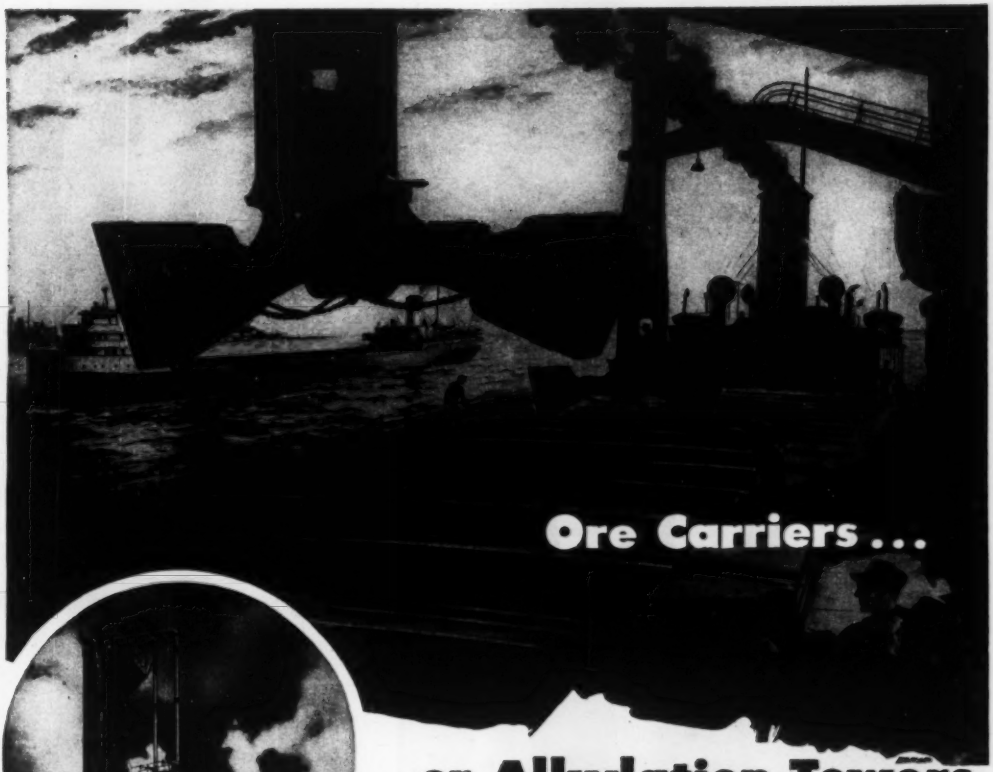
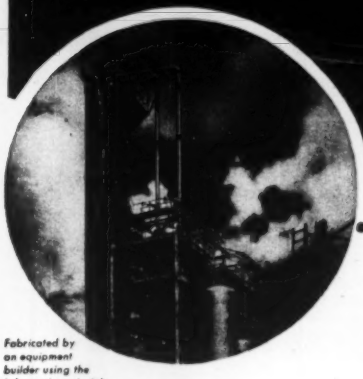


...or Alkylation Towers



Fabricated by an equipment builder using the Lukenomics principle

Project records on this alkylation tower tell a typical Lukenomics story . . . excellent performance, lower costs, simplified construction. The problems presented were solved so well by the equipment builder's experience and his use of Lukens specialty steel plate, heads and steel plate shapes that seven similar towers have since been built. Particularly important now—the long life built into the equipment helps conserve strategic materials.

Whatever your project, it's important! Don't let today's restrictions kidnap efficiency. That's where progressive equipment builders can help. Delivering improved production, despite current conditions, is one of their prime contributions.

An important factor in this is their application of the Lukenomics principle. For Lukenomics combines their experience and that of leading designers and engineers with Lukens' specialized knowledge of materials, their production and application.

Get this *extra* attention for your project. We'll gladly put you in touch with equipment builders applying the Lukenomics principle. Just write, stating your problem, to Manager, Marketing Service, Lukens Steel Company, 513 Lukens Building, Coatesville, Pa.

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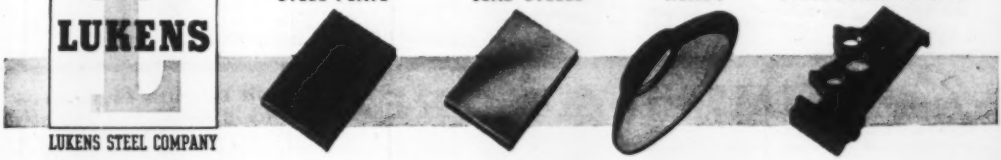


TELSMITH EQUIPMENT FOR DAMS

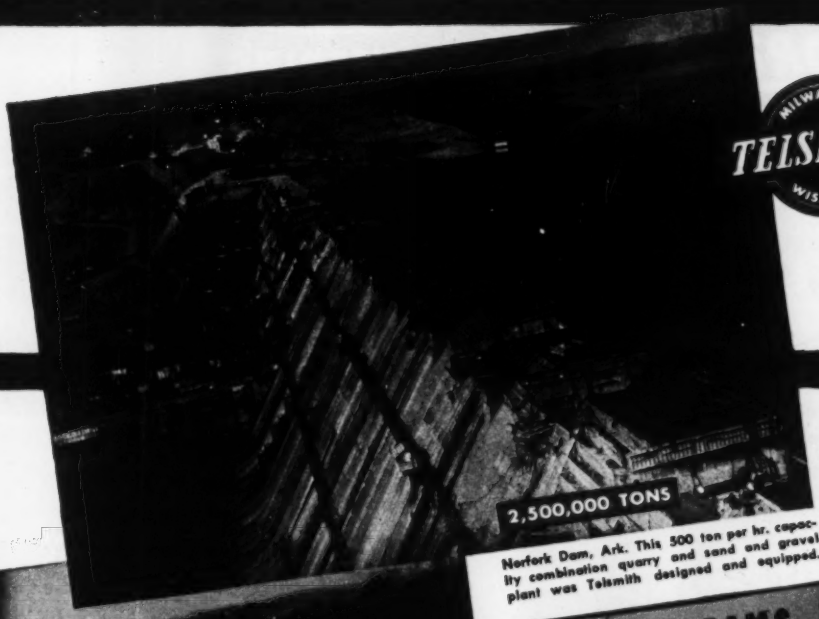
TVA's Watauga Dam, Tenn. Four different types of Telsmith Crushers used on this job.

● Huge dam projects and Telsmith Aggregate Plants go together. Many dam builders call in Telsmith engineers right at the start—for consultation as to the proper plant layout and the right equipment to use. Then Telsmith makes the detailed drawings for the erection of the plant and furnishes most of the machinery. Telsmith designed plants have proven their efficiency on many large projects and Telsmith equipment has a world-wide reputation for the production of low-cost aggregate. The ruggedness of Telsmith equipment is strikingly demonstrated by long life in severest service, on successive projects. After producing 1,500,000 tons of aggregate at Center Hill Dam, the same Telsmith equipment is now turning out about the same amount of aggregate at Buggs Island Dam.

Center Hill Dam, Tenn. Telsmith designed complete crushing-screening plant; and furnished most of the equipment.

Buggs Island Dam, Va. This Telsmith crushing plant also produced the aggregate for Center Hill Dam.

Save **TIME and MONEY** **Consult Telsmith Engineers—Ask for Bulletins 266 and 271**



Norfork Dam, Ark. This 500 ton per hr. capacity combination quarry and sand and gravel plant was Telsmith designed and equipped.

Philpott Dam, Va. Here, too, the crushing-screening equipment is Telsmith.

Mount Morris, Dam, N. Y. The 300-350 tons per hour rock crushing plant is Telsmith designed and equipped.

OTHER DAMS BUILT WITH TELSMITH EQUIPMENT

- Alatoona Dam, Georgia
- Ariel Dam, Ariel, Wash.
- Boysen Dam, Shoshoni, Wyo.
- Carpenter Dam, Arkansas
- Cascade Dam, Washington
- Clark Hill Dam, Augusta, Ga.
- Conowingo Dam, Conowingo, Md.
- Dale Hollow Dam, Tennessee
- Davis Dam, Nevada
- El Presidente Dam, Mexico
- Fort Gibson Dam, Oklahoma
- Grand Coulee Dam, Washington
- Kortes Dam, Wyoming
- Morony Dam, Montana
- South Holston Dam, Tennessee

MS-12

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Lull Fluid Drive swiftly, smoothly transmits power to the broom—without clumsy mechanical linkages. Wear is at a minimum . . . maintenance practically nil!

Ruggedly built, for mounting on industrial tractors, Lull Super Sweepers have proved amazing durability on some of the toughest sweeping jobs in the country.

Available in 5′, 6′ and 7′ models, there's a Lull Super Sweeper priced for *your* budget. On any sweeping job . . . streets, blacktop highways, air ports, parking lots, strip mines . . . you're assured of unbeatable year round performance with a Lull Super Sweeper.

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Power-controlled by the operator, this Fluid-Driven broom swiftly, efficiently whisks dust, snow, dirt and rubbish from streets, runways and ramps . . . cleans hard-to-get-at gutters . . . maneuvers close to awkward curbs.

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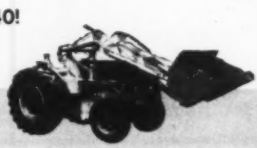
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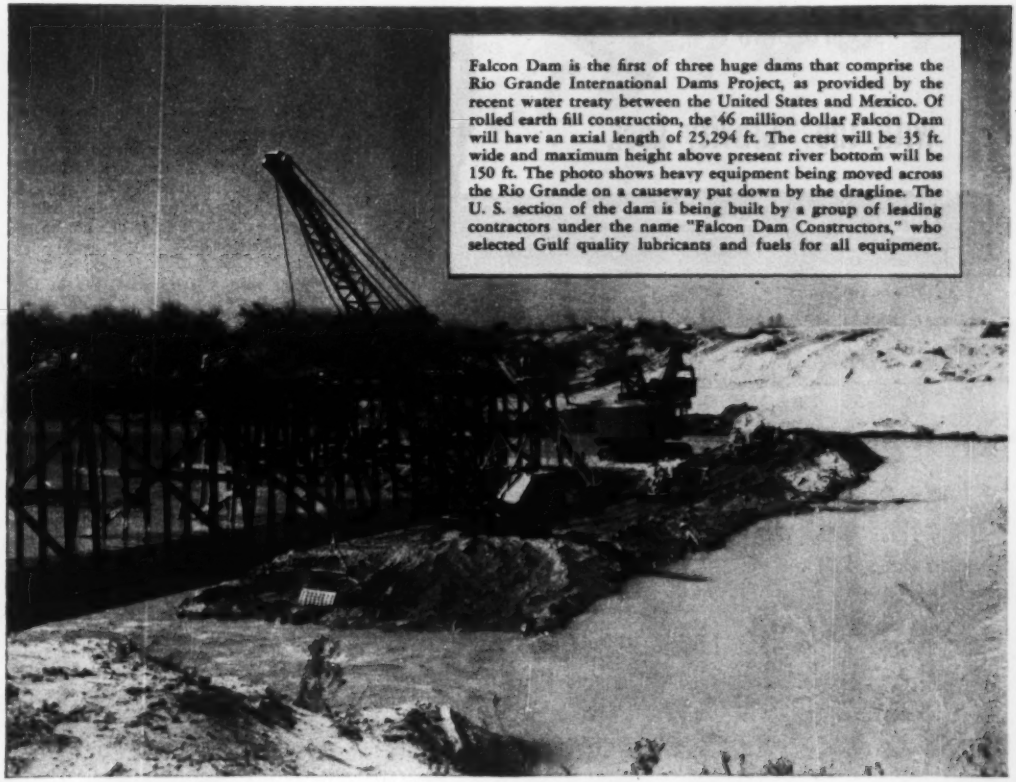
keep equipment rolling

on Falcon Dam Project



Falcon Dam is the first of three huge dams that comprise the Rio Grande International Dams Project, as provided by the recent water treaty between the United States and Mexico. Of rolled earth fill construction, the 46 million dollar Falcon Dam will have an axial length of 25,294 ft. The crest will be 35 ft. wide and maximum height above present river bottom will be 150 ft. The photo shows heavy equipment being moved across the Rio Grande on a causeway put down by the dragline. The U. S. section of the dam is being built by a group of leading contractors under the name "Falcon Dam Constructors," who selected Gulf quality lubricants and fuels for all equipment.

THE Falcon Dam is a big construction project. It's the kind of job on which the contractors are not likely to take chances with their equipment. They want sure protection and efficient power to insure top performance and prevent costly mechanical delays.

That is why Falcon Dam Constructors selected Gulf quality lubricants and fuels—on the basis of experience and reputation. And they are getting the kind of lubrication and fuel performance that is required to complete the job on schedule.

Let us discuss with you how Gulf products and services can help you on your next job. They are available to you through more than 1200 conveniently located warehouses. Gulf Oil Corporation · Gulf Refining Company, Gulf Building, Pittsburgh, Pennsylvania.

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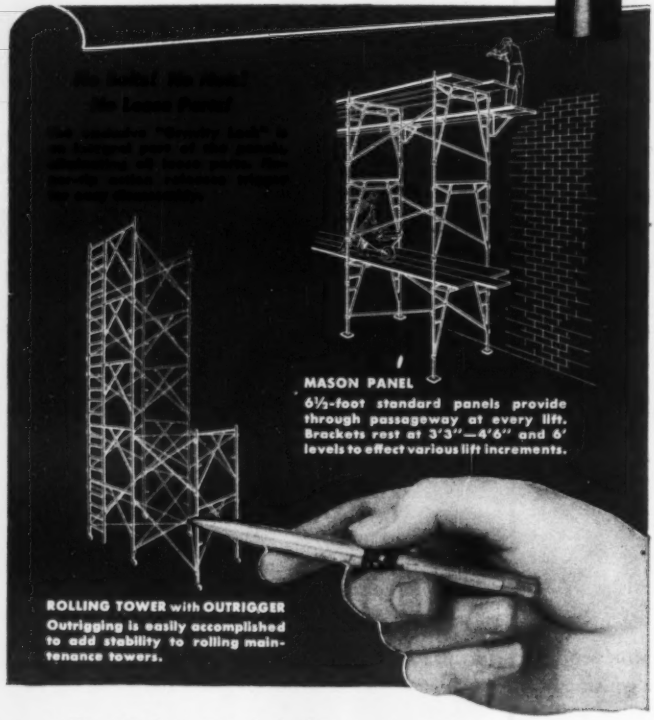
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NEWS BRIEFS

• **Sewer rentals**—With plans for a $267,176 sewage treatment works and interceptor to meet requirements of the Clean Streams program, Lewisburg, Pa., has set sewer rentals of $12 a year per family to pay operation and amortization costs. This is the fourteenth sewage treatment works to be built or placed under construction in the Susquehanna River Basin.

• **Map service**—The Army has set up a map-making project employing 450 persons at Harborside Industrial Park, Providence, R. I. Edwin J. Talbot is manager of the project. The service is housed in the former Mold Loft Building where 42,000 sq ft of floor space has been leased.

• **Free ride**—For 55 years the bridge over the Ohio river linking East Liverpool, Ohio, and Chester, W. Va., has been taking in tolls of dimes and quarters. Now it is free to all. Guest at the toll-ending ceremonies was E. W. Cooper, 77, only living man who helped with the construction job, and recently retired after 60 years of building bridges.

• **Prefabricated stadium**—A prefabricated steel and wood stadium will be shipped from England to South Africa to be erected at Capetown for use during the celebration next April of the 300th anniversary of the founding of that city.

• **Trailers for flood victims**—The federal Housing Agency will send 1,000 family-type trailers to Kansas as temporary housing for people who lost their homes in the flood. The trailers will be purchased with a $3,500,000 allocation President Truman made to the housing agency from emergency funs. The agency said Kansas City, Kan., has asked for 300 trailers, Topeka for 300, and Ottawa for 50. It anticipated there would be other requests since the Red Cross and local authorities estimated 20,000 non-farm homes were destroyed or badly damaged.

• **Embattled farmer**—Defense of his property was the reason given by a Central Arizona farmer for his unbuckling of three sections of a 15-ft diameter flume which was overflowing with floodwaters. An estimated 1,000 acre-ft of water was lost when the farmer diverted water out of the flume and into the Agua Fria riverbed. At the time, 100 acres of the farmer's

(Continued on page 13)

Have you tried PUMPCRETE® on your B-V-D's?

Rex Pumpcrete has proved the lowest cost concrete placement method on hundreds of bridges, viaducts and dams. *For Example:*

BRIDGES Pouring bridge piers in mid-stream is a fine example of cost-cutting Pumpcrete use. Pipe line is run out and into the piers. No heavy road needed to support trucks. No danger of preparatory structures being "washed out." When one pier is completed, pipe is merely extended to the next one. It is also used to pour bridge deck.

VIADUCTS—Pumpcrete is usually ideal for viaduct work because it can handle the job without disrupting traffic and can pump to a height of 120', eliminating need for towers. Here it delivers concrete to a viaduct pier from location on the opposite side of a rail yard. Pipe is laid in a shallow trench under the tracks.

DAMS Time after time Pumpcrete proves to be the most economical method for pouring dams and spillways. Preparatory costs are held to a minimum, and a steady, large volume flow of concrete is assured. On this job a single pipe line and light cableway handled all concreting for a 500-foot spillway and multiple arch bridge above.

PUMPCRETE
REDUCES DIRECT LABOR COST

Concrete is transported, elevated and placed in one operation. No buggying needed.

PUMPCRETE
REDUCES PREPARATORY COSTS

Pumpcrete and pipe line flexibility eliminate need for many access structures in road building and maintenance... trestling and scaffolding, etc.

PUMPCRETE
REDUCES "DEAD TIME"

Pumpcrete delivers concrete steadily... promotes smooth, steady job progress with no interference between various crews.

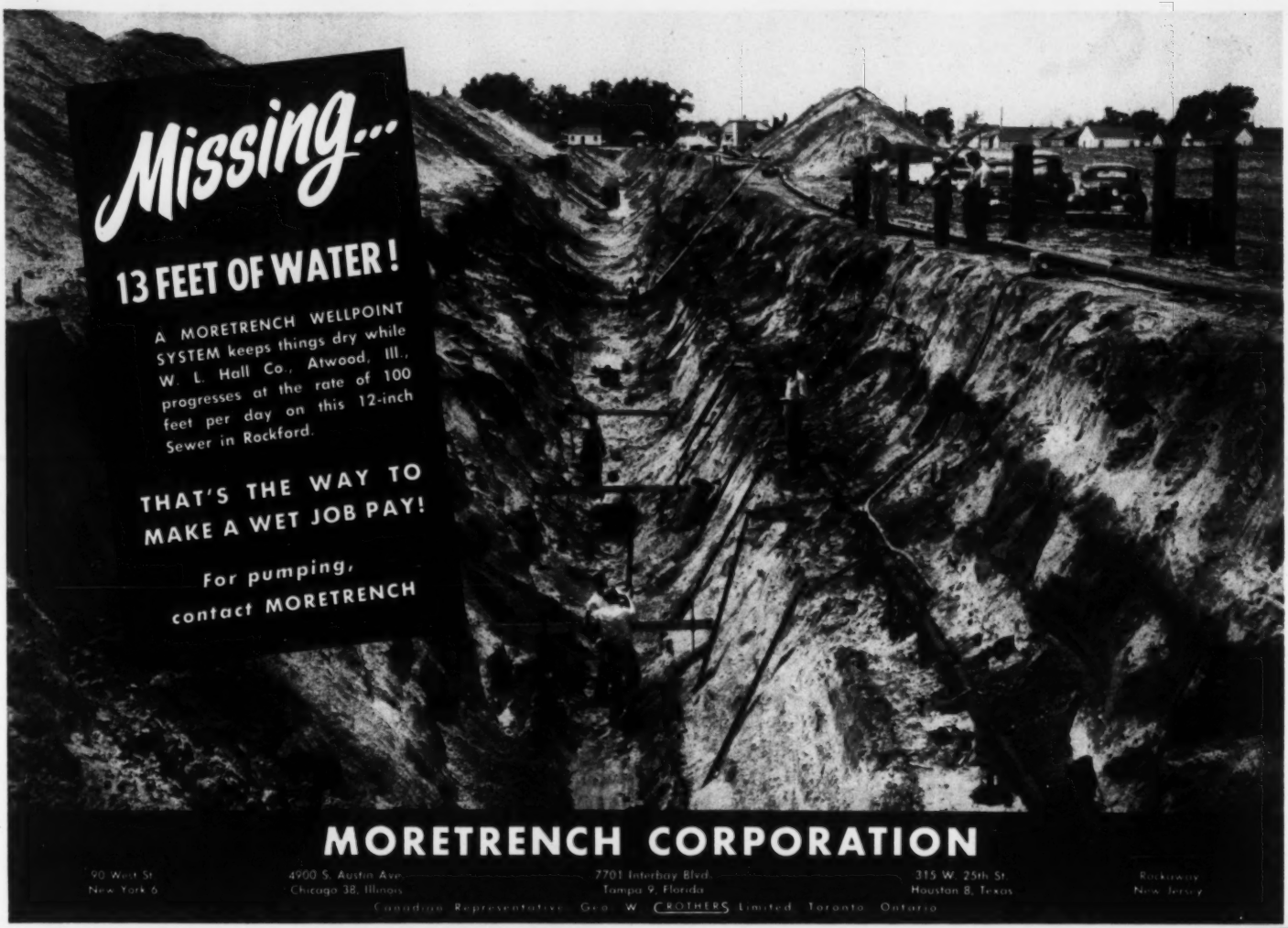
PUMPCRETE
REDUCES NON-PRODUCTIVE MOVING TIME

No need to move mixing equipment from place to place. Pipe line placement permits spotting of Pumpcrete in the one best location for concrete placement.

Ask your local Rex Distributor to give you the details of the many advantages of concrete by pipe line. Or, if you prefer, write to Chain Belt Company, 1633 W. Bruce Street, Milwaukee 4, Wis.

CHAIN BELT REX COMPANY ®

CONSTRUCTION MACHINERY...


Missing...
13 FEET OF WATER!
A MORETRENCH WELLPOINT SYSTEM keeps things dry while W. L. Hall Co., Atwood, Ill., progresses at the rate of 100 feet per day on this 12-inch Sewer in Rockford.
THAT'S THE WAY TO MAKE A WET JOB PAY!
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Briefs . . .

320-acre farm was being flooded and the water was still rising. When the flume water was diverted, a crater 20 ft deep was dug between two support pillars. The irrigation system was tied up three days while repairs were made. Officials of the district, the Maricopa County attorney, and farmers' attorneys will meet to decide legal action.

• **An old timer**—Earl R. Best, project engineer for the Montana highway department, supervising construction of a new section of road on U. S. Highway 10, west of Livingston, Mont., discovered two pieces of bone from a brontosaurus, largest land animal ever to live on this continent. The fossilized bone, from the femur or large leg bone, were given to Montana State College. It was found in a mixture of lava and sand. The animal is believed to have lived during the Cretaceous period of the Mesozoic era, at least 65,000,000 years ago.

• **Build bridge for one pupil**—Douglas Nelson of Wark, England, is only six but to get to school he must walk a mile over a moor. Midway he has to cross Gofton Burn, a brook 8 ft wide and 2 ft deep. The county council has decided that the boy should not have to wade the brook so a bridge is being built for him at a cost of $1,200. It is not a "pons asinorum", as Douglas is a bright lad.

• **Not so fast**—In our Aug. 2 issue we mistakenly stated that electric power has begun flowing from the first unit of the TVA's steam plant at New Johnsonville, Tenn. We now learn from Harry Wiersima, assistant to the chief engineer, that, on account of many delays in the delivery of essential equipment, it may not even be possible to meet an Oct. 1 schedule for getting the first unit "on the line".

The Cover

An unusual double-duty borrow-pit is this huge excavation on the banks of the Delaware River at the site of U. S. Steel's new Fairless Works, near Morrisville, Pa.

The borrow-pit (see also article on page 28 of this issue) will serve—when completed—as a slip to accommodate ore ships that eventually will feed the plant's furnaces. Considered as a borrow pit, the excavation is unusual in that it is being dewatered by wellpoints (Moretrench Corp.); as a slip, it is also unusual in that it is being built in the dry, rather than by wet dredging.

FOR ROAD BUILDERS—who demand longer-lasting and trouble-free equipment there is no better buy than Heltzel steel forms, Heltzel portable bulk cement plants and Heltzel portable aggregate plants. On every concrete highway and airport project you will find men who know the dollars and cents value of Heltzel equipment.

PORTABLE BATCHING PLANTS—Portable aggregate plants in capacities of 30, 45, 52, 72, 85 and 100 tons. Portable bulk cement plants in capacities of 100, 200, 300 and 400 barrels — and 9 sizes of portable recirculators to assure reserve storage to meet every requirement. Standard batchers will service 34E pavers — or dual batchers for the fastest batch truck operation obtainable.

HIGHWAY-AIRPORT FORMS—Standard forms for highway and airport construction are all-welded steel — featuring wide tread, upturned base flange and 5 rigid supports per form. Heltzel's exclusive dual duty forms are demanded by contractors who want one set of forms to pour two slab thicknesses from 6" to 24."

Write for 9-piece kit of contractors' literature

HELTZEL

STEEL FORM & IRON CO.

WARREN, OHIO

NO PUSH NO PULL

with KWIK-MIX **Moto-Bug**® POWER-WHEELBARROW

REDUCES MANUAL EFFORT
INCREASES OUTPUT PER MAN-HOUR
HELPS YOU GET AND KEEP WORKERS

With full power both forward *and reverse* there's no push, *no pull* necessary with Kwik-Mix Moto-Bug. It takes *all* the hard work out of material-handling . . . makes it easier to get and keep workers during periods of labor shortages . . . quickly pays for itself in more production per man-hour.

Operator takes it easy, rides on rear step for traveling, spotting and backing up . . . large steering wheel provides effortless steering and maneuvering. Moto-Bug carries 10 cu. ft. (struck) of bulk materials in big-capacity hopper. *Standard-make,* 4 h.p., 4-cycle gasoline engine easily takes full load up 20% ramps or grades. Handy 33" width clears narrow doorways or aisles. Dual steering wheels are standard equipment . . . dual drive wheels optional for plenty of rubber-tired traction, flotation and handling ease on or off pavement.

1200-lb. flatbed platform, fork lift, and scraper blade, interchangeable with hopper, extend the savings in time and labor to all kinds of material-handling jobs. See your Kwik-Mix distributor for more information.

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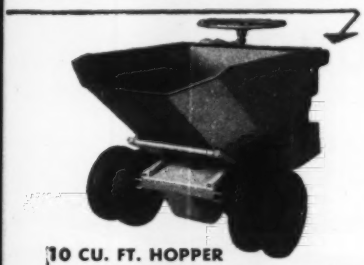
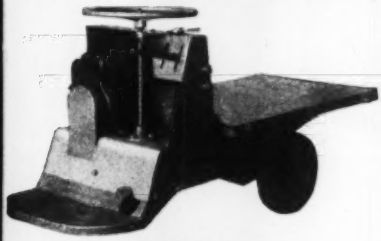
CONCRETE • BITUMINOUS • PLASTER-MORTAR MIXERS

INTERCHANGEABLE MOTO-BUG UNITS CUT COSTS 4 WAYS



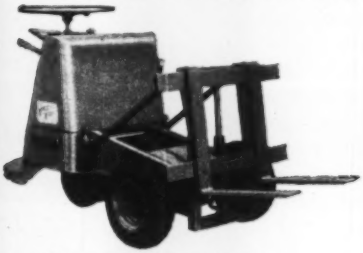
10 CU. FT. HOPPER

has instantaneous, automatic gravity dump, or operator can easily dump partial load by using snub-line attached to hopper body.



FLATBED PLATFORM

carries 1200-lb. load on sturdy 32" x 4 ft. bed. Platform tilts for unloading heavy materials, has stake pockets for sideboards.



ADJUSTABLE FORK LIFT

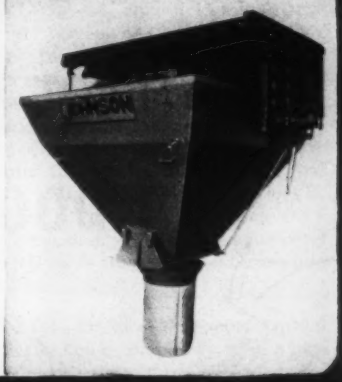
hydraulic pump operated, transports pallets, boxes, barrels, crates and other special bulky objects. Sturdy forks are adjustable in width.

SCRAPER BLADE

for plowing snow, leveling, etc., sets at any angle, is supported by swivel shoe at each end. Hand lever lifts the blade for travel clearance. Not necessary to remove hopper.

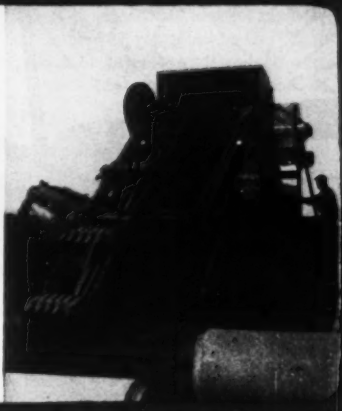
. . . are "Hi-Speed" because extra wide, 15"x36", fill valves and wide bin top openings reduce charging time . . . steep side slopes give fast, clean discharge. Standard batcher handles 34-E paver batch. For charging truck mixers, 4 material "Hi-Speed" Batcher can be furnished with 2, 3 or 4-yd. weigh hoppers having double clam discharge gate and collector ring. Also check the complete Johnson line of mix plants, bins, buckets and silos.

C. S. JOHNSON *(Koehring Subsidiary)*
Champaign, Ill.



With 45 digging feeds, this big-capacity 310 Trenchliner digs 8" to 15½' per minute, depending on depth, width of trench and soils. With single boom, it digs 1½' to 4½' wide at maximum 17' depth . . . and with dual booms it cuts up to 6' wide at depths to 11'. For offset digging (illustrated) boom shifts to cut within 15" of either side of machine. Other models of Trenchliners are available in smaller sizes to fit your exact requirements.

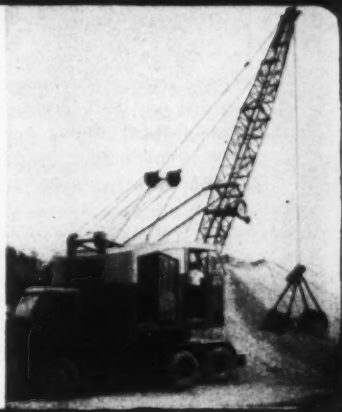
PARSONS *(Koehring Subsidiary)*
Newton, Iowa



Maximum 110-ft. reach, with jib, and 25-ton lift capacity on rubber gives the Koehring 304 Truck Crane plenty of operating stability to handle oversize clamshell and dragline buckets on a wide work range . . . quickly converts to ¾-yd. shovel or hoe. 35 m.p.h. travel cuts non-productive time between jobs. 304 is also available on cruiser or crawler mounting. Other Koehring sizes up to 79½-ton lift, and 2½-yd. dipper capacities.

KOEHRING COMPANY
Milwaukee 16, Wis.

964



Here's how this DB-35 Drifter Combination can boost your output

When you combine a 3½" drifter that packs the drilling power of many 4" machines—with an air-powered jumbo that cuts drilling time 33% per round—with a long-feed aluminum shell that permits fewer steel changes—with Carset Jackbits that drill 50% faster—THEN you have an Ingersoll-Rand drilling combination that's sure to boost your output.

The DB-35 Drifter has a new double-kicker port valve that has resulted in stronger rotation, better hole cleaning, and higher overall efficiency with a big saving in air consumption.

The DJB-2 Boom Jumbo has air-operated booms that raise and lower the drill at the touch of a finger, saving time and effort in making set-ups and spotting the drill from hole to hole.

The Long-Feed Aluminum Shell has the extra length that permits the use of longer steels, with fewer steel changes for a given footage. Aluminum construction cuts shell weight in half.

Carset Jackbits not only increase drilling speeds 50% or more—they out perform a steel bit usage by as much as 400 to 1, practically eliminate bit changes, permit use of longer steels, and cut dynamite requirements by as much as 30%.

Let our experienced rock drill salesmen tell you more about this I-R Drilling Combination. There's a branch office near you.

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THE CONSTRUCTION WEEK

WHO PAYS FLOOD DAMAGES?—III—A Senate Public Works Subcommittee is weighing strongly-voiced pleas from Governor Edward F. Arn of Kansas and Senator Frank Carlson of Kansas, that the federal government grant money for rebuilding flood-damaged midwestern roads without the usual requirement of equal state funds. The governor and the senator are among supporters of legislation proposed to increase from $5 million to $15 million the government's emergency relief fund for repairs of highways and bridges damaged in disasters. Growled back Thomas H. MacDonald, chief of the Federal Bureau of Roads: "The State of Kansas has a responsibility. . . . I do not favor extension of federal aid highway relief funds to states on a more liberal basis than the 50-50 matching now required."

STATE CONTROL FOR OVERLOADS—Defense Transport Administrator James K. Knudson has backed down completely on his proposal to let ICC field offices certify overweight and oversize loads for highway transport. Letters from 47 state governors convinced him that he should adopt the same procedure that the Defense Department set up late last year. Hereafter, ICC offices will screen applications from truckers and will transmit approved requests to the State Highway Departments for final approval or rejection. Knudson succinctly observes that he does not "foresee any very extensive use of the arrangement."

BRIDGE TROUBLES—Opening of the Delaware Memorial Bridge August 16 (ENR Aug. 16, p. 15) brought some unexpected problems —and traffic jams in three adjoining states. On the first Sunday the bridge was open (Aug. 19), traffic coming off the structure jammed three abreast and miles deep at Maryland's Susquehanna Bridge at Perry Point on Route 40; and other jams developed at approaches to the new bridge on both Delaware and New Jersey ends. Officials are inclined to blame heavy sightseer traffic—but they're looking apprehensively at what might happen when New Jersey's new turnpike starts to pour still more traffic over the bridge.

PUGET SOUND BRIDGE DECISION NEARER—With appointment of three consulting engineers by the Washington State Toll Bridge Authority, decision is believed nearer on selection of a site for bridging Puget Sound west of Seattle (ENR March 15, p 30). Appointed as consultants are Ralph Smillie of New York, John L. Parcel of St. Louis, and Ralph Tudor of San Francisco. They are reviewing preliminary studies conducted by Charles E. Andrew, chief consulting engineer for the authority, to determine feasibility, public necessity, location, and design.

MONEY FOR SCIENCE—Alarm over rapidly declining graduation rates for engineers and scientists is behind the fight of educators and others for more money for the National Science Foundation. Appearing before a House committee that chopped 98% of NSF's budget (from $14 million to $300,000), Director Allen Waterman gave as an official estimate that only 17,000 engineers will graduate in 1954, compared to about 51,000 in 1950, and to estimated needs of 30,000 for defense alone in 1954. What scientists want is a fund—of about $5 million—to support about 2,100 graduate fellowships in the sciences and engineering.

Contracts by type of work

	This Week	Cumulative 36 wks 1951	1950	% chge
Waterworks	$3.8	$153.8	$160.0	−4
Sewerage	6.8	220.7	189.9	+16
Bridges	6.9	229.4	253.3	−9
Highways	34.5	842.3	907.2	−7
Earthwork, Waterways	17.9	372.0	314.5	+18
Buildings:				
Public	21.4	1,594.0	1,138.5	+40
Housg., pub.	....	551.6	197.7	+179
Housg., priv.	16.3	1,350.7	2,505.1	−46
Commercial	8.3	473.1	676.6	−30
Industrial	33.9	2,910.7	973.2	+199
Unclassified	10.7	1,269.5	945.0	+34
Total	**160.5**	**9,967.8**	**8,261.0**	**+21**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR COST INDEX

Index Base = 100		1913	1926	1949
Constr. Cost.	Sept. '51	543.21	261.12	113.87
Bldg. Cost	Sept. '51	400.50	216.50	113.85
Volume	Aug. '51	452	184	131

The man* said:

"We need a special trailer to handle a tough cross-country hauling job . . ."

*LeROY L. WADE & SONS, INC.
Heavy Hauling Contractor
Omaha, Nebraska

the project:

Transporting 20-ton spheres, each 16 feet in diameter, 780 miles, from the Milwaukee Works of A. O. Smith Corporation to the Quaker Oats Plant in Omaha. The huge, spherical digesters were too large for railroad transportation and the time element would not permit barging—so a highway trucking plan was used.

Loading the spheres at the Milwaukee Works of the A. O. Smith Corporation prior to the trip.

some of the problems:

- must travel 780 miles instead of 500-mile direct route because of low overheads and weak bridges.
- to design and build special trailer decks for excess widths.
- to maintain sufficient road speed to make the trip in four days.
- to arrange highway police escort for entire route.
- to assure perfect safety during the haul.

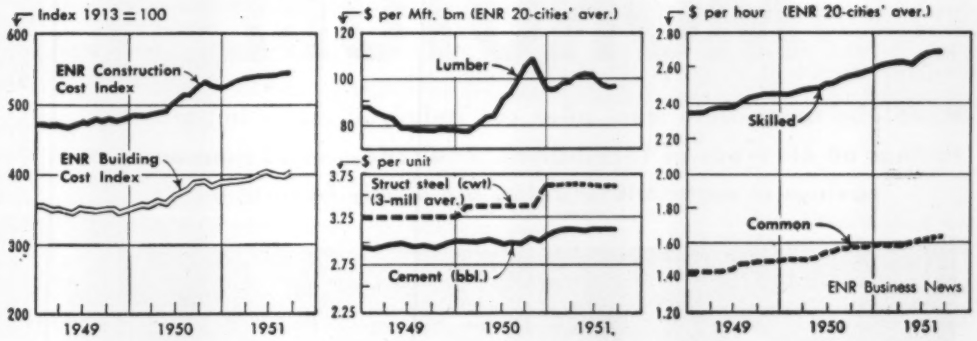
A special TALBERT TRAILER with removable gooseneck* and a removable tandem section was designed for this job in conjunction with LeRoy L. Wade & Sons, Inc. An extra wide deck (10′6″) was used to accommodate the 16′ diameter sphere.

When this project is completed, Wade can easily convert this unit to a standard type trailer by simply putting a standard type deck between the removable tandem section and the removable gooseneck.

THE TALBERT CONSTRUCTION EQUIPMENT CO., of Lyons, Illinois manufactures a complete line of low-bed trailers and dump semi-trailers

THE TALBERT-WAY IS THE EASY WAY

SEPTEMBER CONSTRUCTION SCOREBOARD



ENR INDEXES (1913 = 100)	Sept. '51	Aug. '51	% Change	Sept. '50	% Change
Construction Cost	543.21	542.78	+0.08	530.37	+ 2.4
Building Cost	400.50	400.07	+0.1	392.81	+ 1.9
MATERIAL PRICES (20-cities' average)					
Cement, bulk, per bbl	3.167	3.163	+0.1	2.976	+ 6.4
Structural Steel, (3-mill aver.), per cwt	3.650	3.650	0.0	3.400	+ 7.4
Sand, per ton	2.089	2.089	0.0	1.976	+ 5.7
Lumber, 2x4 Fir, per M. ft. bm	104.706	105.235	−0.5	114.094	− 8.2
Lumber, 2x4 Pine, per M. ft. bm	91.666	90.550	+1.2	99.417	− 7.8
Common brick, per M	31.051	31.001	+0.2	28.875	+ 7.5
Ready-mixed concrete, per c. y	10.885	10.885	0.0	10.450	+ 4.2
Structural Clay Tile, 3x12x12 per M	147.598	147.598	0.0	133.759	+10.3
WAGE RATES (20-cities' average)					
Common	1.637	1.637	0.0	1.561	+ 4.9
Skilled (aver. 3 trades)	2.701	2.701	0.0	2.554	+ 5.7
Bricklayers	2.972	2.972	0.0	2.810	+ 5.8
Structural Ironworkers	2.659	2.659	0.0	2.513	+ 5.8
Carpenters	2.473	2.473	0.0	2.339	+ 5.7

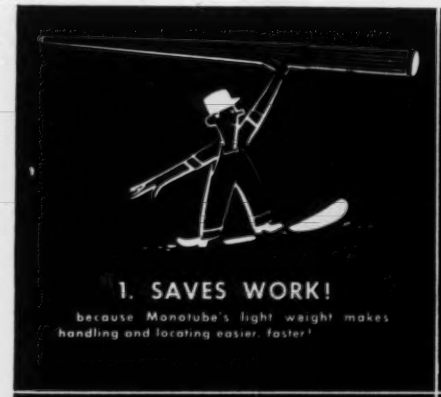
CONTRACTS AWARDED (thous.)	August 1951	August 1950	% Change	Eight Months 1951	Eight Months 1950	% Change
Total U. S. (ENR reported)	$1,145,715	$1,164,682	− 1.6	$9,807,284	$8,004,886	+ 22.5
Private	601,455	702,103	− 14.3	5,188,696	4,635,750	+ 11.9
Public	544,260	462,579	+ 17.6	4,618,588	3,369,136	+ 37.1
Federal	167,373	59,981	+179.0	1,769,616	891,449	+ 98.5
ENR Constr. Volume Index, '13 = 100	452	483	− 6.4	563	489	+ 15.1
NEW CONSTRUCTION CAPITAL						
Total	446,501	344,831	+ 29.5	6,856,525	3,338,124	+105.4
State & Municipal Bond Sales	229,581	255,392	− 10.1	2,313,326	1,952,804	+ 18.5
Corporate Security Sales	179,507	89,439	+100.7	1,460,435	1,385,320	+ 5.4
Federal (non-federal work)	14,804	.....	.....	88,229	.....	.....
Federal (federal work)	22,609	.....	.....	2,994,535	.....	.....

MATERIAL SHIPMENTS & LABOR SUPPLY	June (6) July (7) 1951	1950	% Change	Six Months (6) Seven Months (7) 1951	1952	% Change
Cement, thous. bbls., Bu. of Mines	24,935 (6)	24,749(6)	+ 0.7	112,005(6)	100,132(6)	+11.8
Fabr. Struc. Steel, thous. tons, AISC	202 (7)	166(7)	+21.7	1,573(7)	1,241(7)	+26.7
Lumber, mil. ft. bm., NLMA	3,171 (6)	3,600(6)	−11.9	19,630(6)	19,343(6)	+ 1.5
Lumber Prod., mil. ft. bm., NLMA	3,660 (6)	3,579(6)	+ 2.3	19,978(6)	18,323(6)	+ 9.0
Contract Constr. Employ., thous. BLS	2,726*(7)	2,532(7)	+ 7.7	(Av.) 2,464(7)	(Av.) 2,136(7)	+15.3

* Preliminary.

MONOTUBE

Monotube taper-flute steel piles can help you make important savings on all types of foundations. And today, more than ever, savings in materials and time are *doubly* important.



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because Monotube's light weight makes handling and locating easier, faster!

2. SAVES MATERIALS!

because of proven excellence in transmitting loads to the penetrated soil, plus the assurance of their condition after installation. Monotubes can be designed for heavy loads. Result: fewer piles may do your job.

3. SAVES TIME!

because Monotubes on the job, with easy weld splicing ... are readily extendible ... cut-off and simplified.

4. SAVES WORRIES!

because tubular ... design permits rapid, sure inspection ... before concreting.

Get all the facts about Monotubes' advantages. For complete information, write The Union Metal Manufacturing Company, Canton 5, Ohio.

UNION METAL

Monotube Foundation Piles

Is unity a mirage?

REPORTS are beginning to come in on how local sections of the Founder Societies and state units of the National Society of Professional Engineers are reacting to the four plans for obtaining greater unity in the engineering profession (ENR June 14, p 28).

Many of the state societies of NSPE are in favor of Plan D, which is the most radical of the four as it scraps the Engineers' Joint Council and centers national action on all professional and on all nontechnical matters of interest to engineers in NSPE. Local sections of the American Society of Civil Engineers, on the other hand, are preponderantly in favor of Plan A, which makes the least change in the present setup.

No complete check has been made, but the divergence of the views so far recorded are so wide as to raise question as to whether unity in the engineering profession is actually attainable. The answer appears to depend on each individual's definition of unity.

Unity as visualized by most engineers—an overall organization that will express their *individual* views on a wide variety of national issues with vigor and with confidence based on the knowledge that these views are backed by large numerical strength—can only be a mirage. The reason for this will be found in the fact that there are almost no national questions on which engineers all hold like views. The profession discovered this to its embarrassment back in the days of American Engineering Council.

Yet unity need not be a mirage when it comes to mobilizing the engineering skills needed for some special government undertaking—such as the surveys of German and Japanese industrial potential that was made under the auspices of EJC; or when engineers can render a special service to the communities in which they live—such as the current NSPE plan for aiding communities in their civil defense work.

It appears obvious that if the four unity plans were put to vote now no one of them would get the high percentage of favorable votes that is essential to success. But this conclusion does not mean that all the work of preparing the plans and putting them out for study has been lost. The discussions must have been helpful and productive of closer cooperation among the several groups that participated.

Also, if this better understanding of the viewpoint of other groups should lead to an invitation to the National Society of Professional Engineers to join the Engineers' Joint Council as a full member, real progress toward greater unity will have been made. And if NSPE should accept, the net effect would be close to what was proposed in Plan A.

That action would not be a step toward a vanishing mirage. It would be progress toward the one area in which the engineering profession can be expected to act as a unit—in organized service to the nation in meeting problems where top-level support from the engineering profession is needed.

Bomb data dilemma

MANY CIVIL ENGINEERS are seriously concerned with the lack of information available to them upon which design decisions for bomb resistant construction can be taken. The concern is justified in view of the mounting pressure for greater civil defense efforts, which engenders inquiries as to what structural precautions can be taken to increase protection and minimize damage in an atomic-bomb explosion. As matters stand now, engineers have almost no authoritative data to draw on in framing answers to such inquiries.

That more data exist than are generally available is well known. For example, quite extensive tests on bomb blast effects on structures have been carried out on Eniwetok Island—"900 measurements on 27 different structures including industrial type buildings, dwellings and underground and surface bomb shelters for military use" to quote the last semi-annual report of the Atomic Energy Commission. Yet only the broadest of conclusions from these tests are included in declassified material. Details of the structures, types of localized damage, magnitude of forces and other such specialized data are still unavailable.

The AEC, in so far as policy and expressed intentions are concerned, is attempting to supply the information as fast as its declassification machinery can function. Its report "Damage from Atomic Explosion and Design of Protective Structures", for instance, is a useful example of its efforts. Yet the report is far from complete in the kind of data that are needed. The dilemma the AEC faces, in deciding what information would harm us more than it would help us were it to be made public, is quite as great as the one facing the engineer who is asked to plan against forces whose characteristics and effects are only hazily known to him.

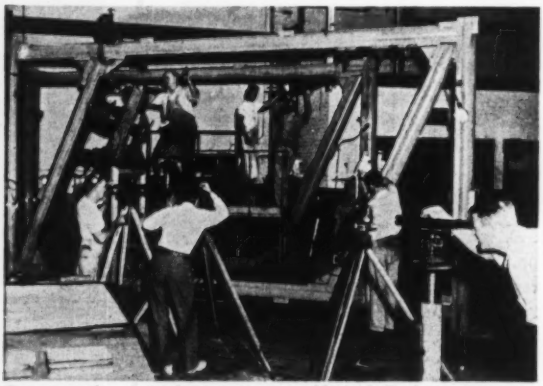
The fact remains that much useful data eventually gets declassified. Speeding up this process—and including more detailed facts rather than just broad conclusions—is greatly to be desired. There are capable civil engineers in the AEC and among its advisors who could be given greater responsibility in the declassification machinery. Organized as a top level committee they could also prepare the kind of reports that would be most useful to the practicing engineer. Some such setup might well provide a way out of the dilemmas that now face both the AEC and the engineering profession in respect to bomb-damage data.

The Surveyor's Notebook

Reporting on Unusual Surveying Problems and Their Solutions

Notekeeper: W. & L. E. Gurley, America's Oldest Engineering Instrument Maker

Jet Plane Assembly: Another Job for Transits



Grumman aligns a jig for jet wing assembly with Gurley instruments.

"A surveyor might be surprised to see his field tools, the transit and level, at work in the daily routine of an aircraft plant," says James Caputo, jig inspector at Grumman Aircraft Engineering Corporation. "These instruments are important tools to us, too, in building the accurate jigs on which planes like Grumman's Panther jets are mass assembled.

"Grumman has been using surveying instruments for optical tooling in jig construction since 1940. I have yet to face an alignment problem that a transit-level combination cannot solve. At least two transits and one level are used to establish lines on each jig. It often takes several months to set master parts on a large new jig, but only a few weeks are needed to make duplicates.

Jet Age transitman: Jim Caputo, jig inspector.

"Sometimes as many as 100 different jigs, large and small, are used in the assembly of a single plane. Grumman uses progressive inspection—checking each part as it is set.

"After careful assembly at Grumman, many of our jigs are torn down and reassembled at points 'round the nation. We pride ourselves on the interchangeability of parts—a result of accurate instruments. Inspectors are allowed a tolerance of 1/64" with transits; but I find Gurley Transits hold to 0.010"—often as low as 0.005". All measurements are done from the center, water, and fuselage reference lines.

"Once in a while, an assembly inspector gets a chance to do some outdoors surveying—laying out a speed course or a new road on the Grumman grounds. When he does, he again chooses a Gurley. As my boss puts it, 'You are only as accurate as your instrument'."

Write for Bulletin 50 giving complete details on Gurley transits, levels and other engineering instruments. And enclose a surveying tip for this page.

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ENGINEERING NEWS-RECORD

SEPTEMBER 6, 1951 VOL. 147 NO. 10

OPS to impose construction price controls on October 1

New regulation being framed to meet special problems in building industry will cover all contractors; records to determine contract ceiling prices

A price control regulation, tailored to meet some of the objections of the construction industry, will go into effect Oct. 1, the Office of Price Stabilization said this week.

There was considerable argument within the industry as to how well tailored the control regulation actually is—but, here are principal provisions:

• **Everybody in**—All construction contractors, big and little, are covered by the regulation. The regulation covers any transaction in which the seller "furnishes labor, materials and services for building, highway, heavy and miscellaneous construction, including new and additional construction."

The 360-day period July 1, 1949-June 24, 1950 is set as a base period on which to start figuring costs.

For general contractors, the ceiling price for a job being bid in the future will be: Estimated cost, plus a markup (overhead and profit) not to exceed 90% of the highest markup used or quoted on a bid or contract basis on similar construction (in size or character) during the base period.

Records must be kept for two years to illustrate how prices were arrived at. It is probable that general contractors will not be required to submit regular reports; but specialty contractors and jobbers working on installed equipment probably will be required to report.

• **Everybody out**—The new regulation is a partial answer to the contention of many contractors that they should not be classed under the provisions of CPR 34, a general price ruling on service industries.

Thus the newly-announced regulation satisfies the demand for a separate pricing order. It resulted after a long series of conferences with the 15-member Construction Industry Advisory Committee.

But agreement stops at the point that such an order is required, if government policies direct that construction also should be regulated.

• **Objections cited**—Many larger general contractors have opposed the idea of such regulation on the ground it will be virtually unworkable. They point out:

No two construction jobs are ever directly comparable; contractors bidding on jobs are bidding on estimates of what prices and labor costs and overhead may be over a comparatively long period in the future; the practice of competitive bidding is better insurance of best prices for the buyer than any system of fixed pricing could be.

Smaller contractors saw another failing: As written, the regulation would virtually keep new firms from going into business. Under one interpretation of the new regulation, a new firm might bid a job, be awarded the contract—and then would have to submit its prices to OPS for approval. That procedure might delay matters considerably in getting work started, even if OPS should approve the prices quoted.

Co-op seeks dam site

A Rural Electrification Administration co-op in North Carolina is aiming for big-league hydro power development.

The Blue Ridge Electric Membership Corp., Lenoir, N. C., has asked the Federal Power Commission to grant a preliminary permit that would protect the co-op's priority while it scouts the lay of the land for a 66,000-kw water power project deep in the mountains of the northwest part of the state.

Local people who don't like the co-op's proposal had until last week to file protests with the FPC. The opportunity brought in a flood of mail—some 60 protests in all—from power companies, city councils, mayors, chambers of commerce, industries and individuals.

Objections in such unusual volume may put a damper on the co-op's chances, but FPC might issue a permit anyway. After all, a preliminary permit merely authorizes surveys and studies—makes no commitment as to an eventual license to be issued for construction.

Prospects dim for 4th quarter steel

Construction cutbacks for the fourth quarter are far more severe than anticipated a month ago. Structural steel is the guide post item: allotments of that scarce product run as low as 11% of requirements for commercial construction.

For highways, the structural steel allocation is only 42% of what is needed. Every construction program is cut except four that rate tops in essentiality: Army, Navy, Air Force and aluminum expansion.

These four programs—together with all of the National Production Authority's industrial expansion programs—were trimmed to the bone before their basic requirements were calculated. Then—except for these four—the requirements figures of all programs were measured against the available supply of structural steel, and the allotments were cut to fit the cloth.

• **Cuts severe**—That cutting called for an overall reduction of more than 50% below requirements. Programs that rate high in defense importance—as mobilization officials see it—took smaller cuts than other programs which seem less essential to these men. But—to a construction observer—all the cuts look drastic.

Even urgent industrial expansion programs are sharply curtailed. Iron and steel expansion, for example, gets only 51% of its screened and dewatered fourth-quarter requirements.

Other industrial expansion—for such badly needed products as industrial machine equipment, chemicals, and electrical and electronic equipment—will receive only 26% of the structural steel it needs in the fourth quarter.

• **Depth shown**—How deep these cuts go is shown in the table on page 25. The only industrial expansion programs—besides aluminum—that get more than 70% of their requirements are ferro-alloys, refractories and foundries. Commercial construction takes a terrific wallop, with only 12,055 tons allotted, as against 106,574 needed.

(*Continued on page 25*)

Congress stirs up low cost housing market by easing credit restrictions

Reconstruction Finance Corp. prepares to loosen loans for building in critical defense industry and military areas

Congress is easing credit restrictions across the nation on houses that cost up to $12,000.

In the new Defense Housing Act it has relaxed Regulation X for homes in this price class, lowering the amount of down payment required to buy one. The Housing and Home Finance Agency and the Federal Reserve Board are getting out new rules to smooth out the jump in down payments required for houses costing more than $12,000.

Two brakes on the housing market remain, however: shortages of certain materials, and a tight mortgage market.

In spite of these clouds on their horizon, homebuilders look forward happily to a renewal of a housing boom that reached a postwar peak in 1951.

Under Regulation X, issued Oct. 12, 1950 (by the Federal Reserve Board and the Housing and Home Finance Agency) down payments required ranged upward from 10% of the purchase price (for a $6,000 house) to 50% (for a $25,000 house). Veterans rates were set somewhat lower; maturity periods were shortened—generally to 20 years.

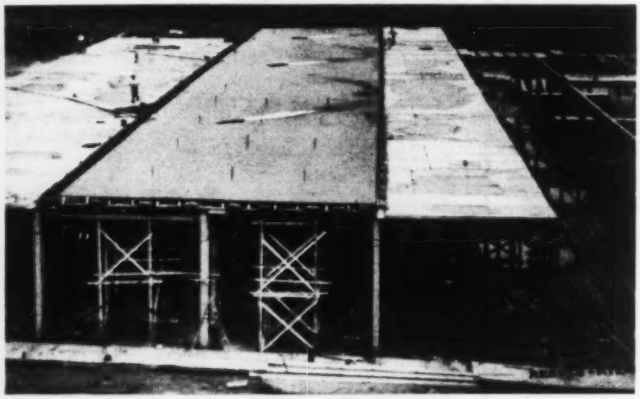
Biggest immediate block is the mortgage market. As far back as May (ENR May 17, p. 75) the tightening in the mortgage market was apparent, as major lending institutions began to curtail their buying of paper.

The reasons are many, but they include the March 4 agreement between the Treasury and the Federal Reserve Board that "unpegged" government bonds and thus made it more risky to convert bonds into cash for investment in mortgages; and the fact that many large insurance companies had completed balancing their loan portfolios.

• **RFC Plans move**—To remedy this situation the Reconstruction Finance Corp. approved a change in loan policy to permit loans for housing in critical defense areas and on military reservations.

The matter of materials seems to rest about this way: There'll be enough, if home-buyers are satisfied with a little less—with one bathroom, smaller brass doorknobs, less gadgetry. If things get too bad, NPA can still hold down the drain by a strict enforcement of the Controlled Materials Plan, and even by individual allocation, if such a procedure becomes necessary.

For the moment, anyway, fabricators of housing hardware have been authorized to make enough hardware (using copper, aluminum and steel) for about 850,000 houses.



PRECAST BUILDING PASSES LOAD TEST—Up to 13 in. of water, equivalent to about three times design live load, on a 257x40-ft section of roof was supported without damage by the precast concrete structural frame of the Kraft Foods factory, which is being built by the Corbetta Construction Co. in Decatur, Ga. The load test was made to verify the strength of the structural frame, in view of the failure of an outer column causing the collapse of two bays on April 21 (ENR May 3, p. 29 and June 14, p. 24). Part of a rigid frame, the column is said to have been under-reinforced at the haunch due to a mistake in the design calculations. It and seven similar columns were redesigned prior to the load test. Maximum girder deflection was 0.85 in. in a 47-ft span; recovery varied from 61 to 97%.

Thompson-Starrett reveals organization changes

Stockholders of Thompson-Starrett Co., Inc., New York City construction firm, were informed this week of "far reaching reorganization and simplification" of the firm's administration. The moves, said J. R. Van Raalte, president, will reduce operating overhead costs by $150,000 annually, and strengthen management. Changes include:

Election of three new directors—Leon P. O'Connor, now vice-president and general manager; A. R. Herske, president of Au-Temp-Co Corp.; and Edward F. McNulty, insurance executive. Russel D. Koons, of Los Angeles, was appointed chief engineer; George J. Meyers of San Francisco became assistant vice president in charge of budget and cost control; James H. Elkins, Pittsburgh, operations manager in charge of field construction.

FPC rechecks power supply for Utah, Idaho, Montana

The Federal Power Commission is reported to be rechecking water power supplies in Idaho, Montana, and Utah, in the light of new industrial plants under construction in that region.

Results of their survey may convince the Federal Budget Bureau that money should be provided for the proposed $76-million Palisades Dam in the Snake River. Both the Reclamation Bureau and the Defense Electric Power Administration are reported to have approved the project.

Jet plant announced

Construction of a $30-million plant near Detroit for assembly and testing of jet aircraft engines, is being planned on a rush basis by the Navy.

Albert Kahn Associates, Detroit, are working on plans and specifications. To speed construction, the site will be prepared while final plans are still being drafted.

The plant will be situated on a 306 acre tract west of Detroit. When completed early in 1953, it will be operated by the Chrysler Corp.

Prospects dim . . .

(Continued from page 23)

How the military forces will be able to maintain schedules on nearly $3 billion of going projects and at the same time start more than $1 billion of new contracts in the fourth quarter—with a total of only 42,600 tons of structural steel allotted to them—is not apparent from these figures. But you can bet that the military construction program will not be slowed down. As soon as Congress appropriates the money, the Armed Forces will step up the award on new jobs.

For commercial construction, the 89% cut in structural steel requirements tells only part of the story. To take care of its huge segment of commercial, religious and institutional building, the Construction Controls Division—as claimant agency—received fourth-quarter allotments of 3,000 lb of aluminum and 86,000 lb of copper (reduced from an original copper allocation of 186,000 lb).

Fourth Quarter Structural Steel Allotments for Military, Industrial and Commercial Construction

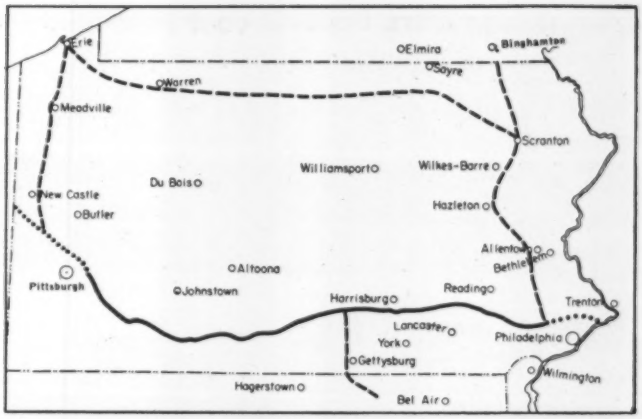
(in tons)

Program	Screened Requirements	Allotment	Percent of Need
Military:			
Army	4,059	4,059	100
Navy	7,306	7,306	100
Air Force	31,237	31,237	100
Industrial:			
Aluminum	19,010	19,010	100
Iron & Steel	174,957	89,468	51
Ferro-alloys	15,514	12,719	82
Refractories	8,736	6,578	75
Foundries	3,883	2,815	72
Other industrial expansion, including chemicals, industrial machine equipment, electrical and electronic equipment, textiles, pulp and paper, etc.	121,723	32,515	26
Commercial:			
General commercial Construction	106,574	12,055	11

• Requests cut—Requests that came into the agency on CMP-4C applications for the same quarter totaled more than 4.5 million lb of copper and more than 5 million lb of aluminum. The agency quietly returned to DPA its driblet of aluminum, and distributed the smidgin of copper as best it could in the face of the vast need.

It's no wonder that commercial CMP-4C applications are being denied by the thousands, as fast as they can be examined and signed.

No denial is final, of course. For all types of projects, applicants who must be refused materials for the fourth quarter are told the reasons for the deferral and are asked to reapply for the next quarter.



PROPOSED TURNPIKE NETWORK—Solid line shows present Pennsylvania Turnpike. Dotted lines show western extention (under construction) and eastern extension planned to join the New Jersey Turnpike. Dashes show other proposed extensions which would give the network a total of more than 1,000 miles. Gov. John S. Fine has vetoed authorization for the Erie-Scranton section.

Erie-Scranton turnpike plan vetoed

Governor John S. Fine has put the brakes on Pennsylvania turnpike extensions planned too far in the future.

This year the General Assembly of Pennsylvania has been moving ahead steadily on plans to build its turnpike network to 1,000 mi—more turnpike mileage than exists or is planned in any other state.

The state's first turnpike—160 miles from Irwin to Middlesex—was opened 11 years ago (ENR June 20, 1940, p. 835) and has been a paying investment.

• Plans outlined—Last year the Turnpike Commission opened its 100-mile eastern extension from Middlesex to King of Prussia near Philadelphia. At the western end of the turnpike, construction is rapidly nearing completion on a 67-mile extension to the Ohio line near Youngstown.

Plans are in preparation for a Delaware River extension which will carry the super highway eastward from King of Prussia to connect via a new Delaware River bridge with the New Jersey Turnpike now under construction.

Two more extensions have been authorized if traffic surveys show they will pay. One will run northward from the Pittsburgh area to Erie. The other will run northward from Harrisburg to Scranton.

• Others sought—The current session of the General Assembly has been working on authorization for three more extensions.

These extensions are: (1) From Erie to Scranton across northern Pennsylvania: (2) From Sayre near the New York border southward to serve Towanda, Wilkes-Barre, Scranton, Bethlehem and Allentown, and join the present Turnpike somewhere north of Philadelphia: (3) From a point on the Turnpike west of Harrisburg southward to the Maryland-Pennsylvania line near Gettysburg to link with a proposed express highway to Washington, D. C.

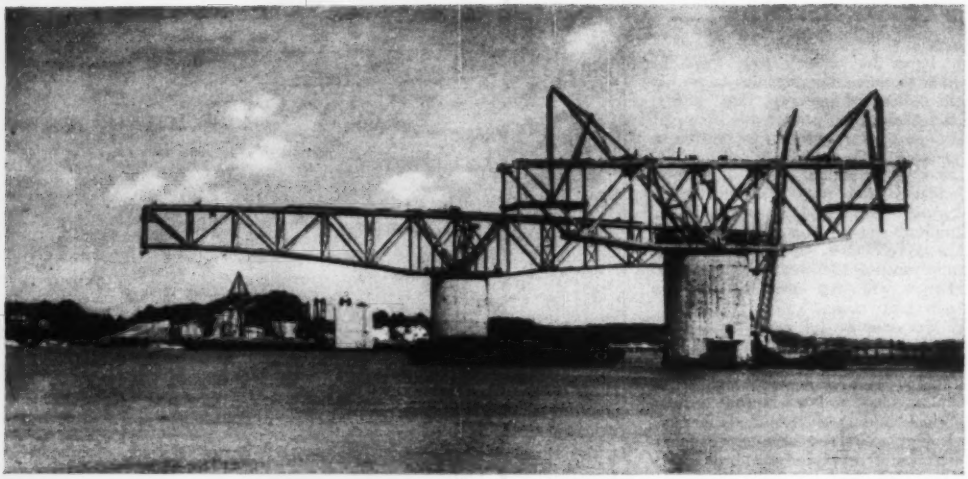
Authorization seemed assured this year until Gov. Fine upset the legislative plans when he vetoed the pivotal Erie-Scranton extension of the Turnpike.

Fate of the proposed extension from Sayre southward, awaiting Fine's signature now appears in doubt, as is the future of the southern extension to the Maryland line waiting action in the House.

Aluminum loan approved

The Defense Production Administration has approved a $46 million loan to the Harvey Machine Co. to finance construction of two aluminum plants. The loan will be made by the Reconstruction Finance Corp. as the government fiscal agent.

Of the $46 million, approximately $34 million will go for construction of an aluminum plant near Kalispell, Montana. The remaining $12 million will be used to build an aluminum plant north of Seattle, Washington.



SWING SPANS NEAR COMPLETION—Steel erection on two 500-ft swing spans is nearly finished on the $8-million George P. Coleman Bridge now being built over the York River between Yorktown and Gloucester on US 17. (ENR Dec. 21, 1950, p. 32) The largest swing spans ever to be assembled, they will give a 450-ft clearance. Substructure for the bridge is 97% completed; superstructure, 60% completed. It is expected to open for traffic by April next year.

Toledo Expressway plans include $16.7-million central bridge section

Tampa Bay Bridge project moves ahead; work begins on Bay St. Louis Gulf Coast span; other projects active

Route for a 10-mile by-pass expressway through Toledo, Ohio, from Woodville Road to the Michigan-Ohio State Line has been announced by City Manager Arnold V. Finch.

Central section of the project will be a $16.7-million bridge across the Maumee River with elaborate interchanges and grade separations on both banks totaling 7,000 ft. Plans for the bridge substructure will be ready in the next two weeks. Bridge superstructure and interchange plans are due March 15, 1952.

A total of 37 bridges will be required to carry the expressway over or under major thoroughfares and railroads. The project was authorized by Toledo voters last fall. First construction contracts are to be let in November.

• **Activities high**—Other activities in new bridge construction this week:

Bids were scheduled to be opened this week on the $21-million Tampa Bay bridge, Florida. Construction is expected to be underway within 60 days according to Walter E. Keyes, director of the Florida State Improvement Commission.

• **Bay St. Louis bridge**—Preparatory work has been started by Merritt, Chapman & Scott Corp. on a $6-million bridge on Route 90 across the mouth of the Bay St. Louis on the Gulf Coast of Mississippi.

The bridge will be 10,198 ft long and will carry a four-lane reinforced concrete highway consisting of two 26-ft lanes and a 3-ft divider, and two walkways. Total width will be 63-ft.

At the channel point, a 124-ft bascule span will provide 100-ft clearance. Two steel approach spans flank the bascule draw. Contract includes removal of an old wooden tressle bridge 1,000 ft south of the new bridge.

• **Others planned**—In Rhode Island, construction of a $5-million high-level bridge is planned over the Sakonnet River, with approaches in Tiverton and Portsmouth. The new bridge would replace the Old Stone Bridge.

Agreements have been signed by Kentucky and Illinois authorizing construction of a bridge across the Ohio River at Shawneetown, Ill. It is estimated to cost $3 million. Construction is expected to begin early 1952.

Dravo Corp. has been awarded a $900,000 contract to build four main river pier foundations for a four-lane highway bridge across the Ohio River at Wheeling, W. Va. on Route 40. Separate bids will be taken later for land piers and approaches.

Concrete industry board to qualify contractors

First meeting of the recently created board of directors of the Concrete Industry Board will be held next week in New York City to discuss a program for next year. Most important item on the agenda is a plan to improve the quality of concrete to be placed in the New York City area.

According to Roger H. Corbetta, chairman of the board of directors, the plan will set very high requirements for membership in the CIB. In this way membership will be considered pre-qualification for concrete construction work.

The CIB was organized in June (ENR June 14, p. 25). It is sponsored by the Cement League, a component of the Building Trades Employers Association that deals mainly with labor-management problems. Membership in the CIB is open to engineers, architects, materials suppliers, inspection firms, contractors and technical societies concerned.

A preliminary survey has been started by Canadian National Railways for a rail link between Terrace on CNR's main line to Prince Rupert, and Kitimat, site of the smelters in Aluminum Company of Canada's $500 million power and aluminum project in the Tweedsmuir Park area.

W. H. McElroy, district engineer for CNR at Winnipeg, is heading the survey of the 47-mi. route.

Wolf Creek Dam starts key Cumberland role

Notables at opening ceremonies dedicate structure to flood control job in Cumberland River basin

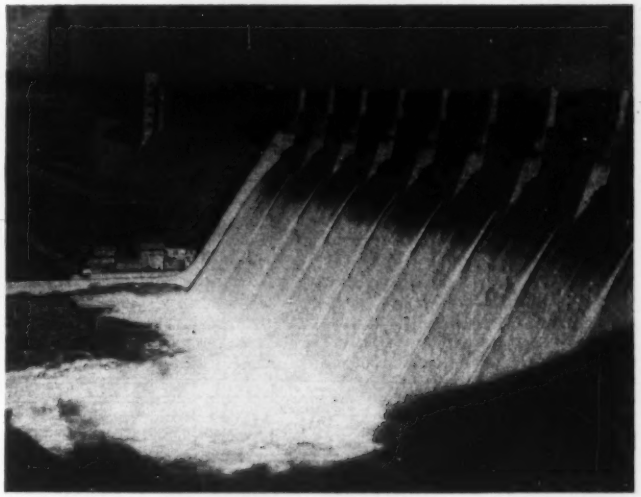
Wolf Creek Dam on the Cumberland River in Kentucky was dedicated Sept. 1. This $82,700,000 project of the Corps of Engineers is No. 3 of six in a comprehensive flood control and power plan for the upper Cumberland watershed.

Dale Hollow Reservoir on the Obey River and Center Hill on the Caney Fork are functioning; but Wolf Creek Dam is key unit in the scheme. It can store over 6,000,000 acre–ft of water in a 100-mile-long reservoir having 1,255 miles of shoreline. Power drawdown of 50 ft will provide hydroelectric generating capacity of 270,000 kw, in six units.

Some $3,000,000 yet to be spent on the project will complete its urgently needed power plant. Final completion is expected by next May.

The 240-ft high dam, dedicated with fitting fanfare last week, is a concrete gravity structure of 1,400,000 cu yd, flanked by earthfill embankments totalling near 9,000,000 cu yd in volume. Total length of the structure is 5,736 ft–1,796 ft concrete, 3,940 ft earth. (See ENR Mar 31, 1949, p. 27)

Wolf Creek Dam controls runoff from over 50% of the 11,000-sq mi portion of Cumberland Basin in the Army's flood control scheme. And in so doing, it backs up a reservoir that will vary in area from 35,000 to 50,000 acres as power drawdown varies pool level.



KEY TO CUMBERLAND CONTROL—One-third of the more-than-6,000,000 acre-ft of water storage space behind Wolf Creek Dam will be for flood control.

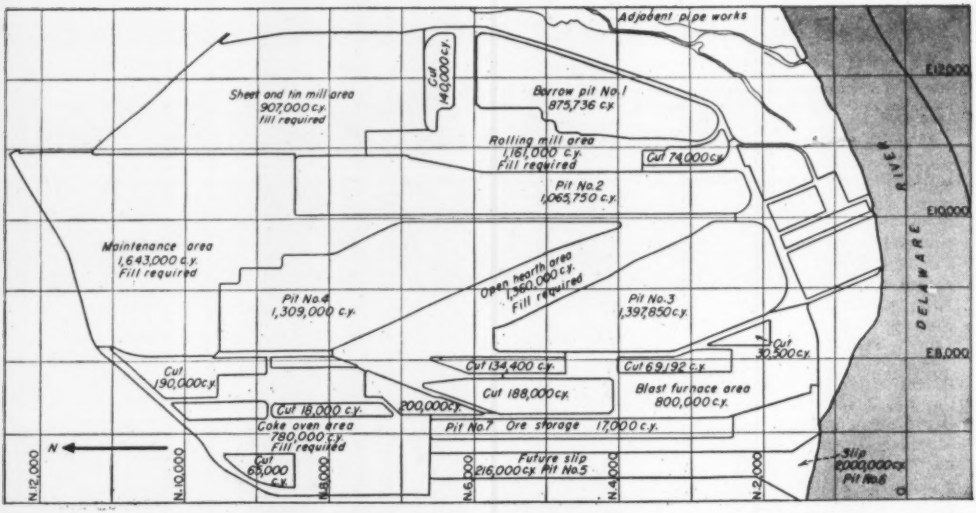
• **Dedication dignitaries**—Among many honored guests at the well-attended dedication ceremony, those on the speaking program included Vice-President Alben Barkley, Lt. Gen. Lewis A. Pick, chief of engineers, and Gov. Lawrence Wetherby, Kentucky.

Construction at Wolf Creek is under the Nashville District of the Corps of Engineers; Col. Henry Walsh, district engineer, presided at the formal dedication ceremony.

Contractors who completed the dam are a combine of J. A. Jones Construction Co. and Wright Contracting Co. H. V. Appen was their general superintendent. Early portions of the earthmoving work were done by S. A. Healy Co. of Chicago 10 years ago; the Jones-Wright Co. took over and finished the dam. E. J. Albrecht Co. is contractor on the power plant.

Three Cumberland Basin dams are still to be built.

TRANSFORMATION—Here's what the 100-mile reservoir behind Wolf Creek Dam did to the area around Burnside, Ky. It submerged some old bridges and a few factories, but it caused two fine new bridges to be built. The Southern Railway crossing, farthest upstream, is a product of Modjeski & Masters, consulting engineers, Harrisburg, Pa. Massman Construction Co. handled the foundations and Mt. Vernon Bridge Co. the superstructure. The parallel bridge is a project of the Kentucky State Highway Department, H. R. Creal, assistant chief engineer, and E. D. Smith, bridge engineer. The foundations were built by Massman and the superstructure by the Midland Structural Steel Co. The highway bridge is one of eight that had to be built by Kentucky at U. S. expense ($5,450,000) to replace structures submerged by the reservoir. (Photos by Louisville Courier-Journal).



EARTHMOVING PLAN—Site preparation for U. S. Steel's all-new plant at Morrisville, Pa., called for 8,750,000 cu yd of fill, to bring operational areas from average elevation of 12 ft up to 20 ft. Borrow pits, cut down to water table, eventually will be filled with plant waste. Grid interval on drawing above is 1000 ft.

CONSTRUCTION FOR STEEL: The Fairless Works substructure contract

Steel plant rises from Pennsylvania farmland

FAIRLESS WORKS, U. S. Steel's plant near Trenton, N. J., is the kind of steel-expansion construction everyone can know and appreciate.

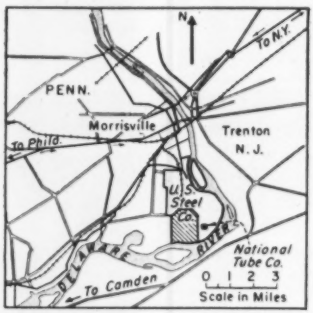
Unlike the current iron-ore development programs in isolated areas, it is located right at the heart of one of our most populated regions, where it may be seen by millions.

And unlike many expansions of existing plants in other populous areas, the Fairless Works leaves little to the imagination. It is all new, so the citizen need not stare at an assortment of new works among older structures, and only barely know that he's witnessing an operation that is vital to America's drive for more steel-making capacity.

Here, every scraper, piledriver, concrete form and erection crane asserts the same thing—that it is adding 1.8 million tons of annual steel ingot production to the nation's total. While other plants are larger, this is the largest plant ever to be built in a single initial operation.

• **High-speed work**—And it probably will be the fastest job of this size on record. Ground was broken March 1, and already some large buildings are enclosed. The two blast furnaces are well under way and first steel should be processed early in 1952.

Speed has not been confined to the construction stage. Late in 1950, when U. S. Steel decided to build the whole Fairless Works at once, the company quickly expanded its design offices from a handful of men to 200 employees, and also engaged consulting firms for part of the work. Then, to get the rural site into shape quickly, complete with foundations, utilities and railroads, the company adopted a wartime expedient. It awarded a unit price type of contract to a joint venture headed by Walsh Const. Co., of Davenport, Iowa. By this means, U. S. Steel could get the work going before superstructure designs were complete. (Superstructure work will be the subject of another article.) Overall plant cost is reported to be about $400,000,000.



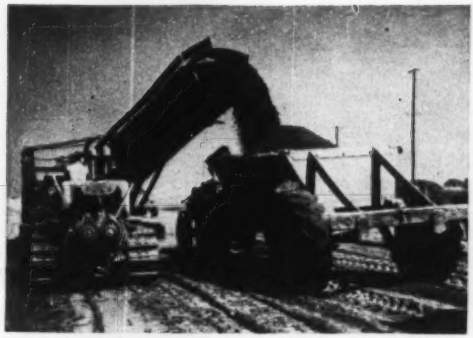
EASTERNMOST POINT of Pennsylvania, just downstream from Trenton, N. J., is location of Fairless Works.

The Walsh contract covers work for the U. S. Steel Co., which will make iron, steel, billets, bars, sheets and tin plate, and for another U.S.S. subsidiary, National Tube, which will make pipe. "Fairless Works" applies to both manufacturing units.

Substructure work includes about 8,750,000 cu yd of fill, 650,000 cu yd of excavation, 75 miles of railroad track, 20 miles of roads, 25 miles of sewers, 20,000 steel H-piles, 700,000 cu yd of concrete, 4,000 ft of waterfront bulkhead, as well as water and waste treatment facilities that will handle 246 mgd.

Construction features include high-volume earthwork, large wellpoint installations, high-production piledriving, and wide application of a flexible form type—a metal-bound plastic-faced plywood panel.

• **The raw site**—Covering 3,800 acres, the construction site lies within the Delaware River bend that establishes Pennsylvania's eastern extremity. Its terrain varies gently from 5 to 16 ft above mean sealevel, averaging about 12. Soil profile and stratification are



DIG WITH LOADERS—Long, shallow borrow pits and sandy soil made loaders logical excavation tools. Fifteen-yard wagon gets its fill in ten seconds.

FILL WITH WAGONS—Fill boss signals wagon driver to dump his load. Wheels and tracks of equipment do most of compacting but rollers also are used.

variable, with beds of sand, gravel and clay overlying beds of mica schist 75 to 150 ft deep.

Top soil and loam range from 5 to 10 ft in thickness. In most of the area the next horizon is sand and gravel, generally 10 to 20 ft thick.

Where feasible, building loads are carried on spread footings in the granular layer, whose design average bearing load is three tons per square foot. In places where the gravel is thin, too deep, or non-existent, friction piles are used. They also are used for high unit loads, such as those of the blast and open-hearth furnaces. Two pile sizes, 12-in. 52-lb, and 14-in. 73 lb, are driven for 50-ton and 70-ton loading, respectively.

Site conditions, in addition to establishing these three principal foundations, also called for topographical revision to suit the mill's functions. Ground in operational areas is to be at El 20, which is well above the site's average. Accordingly several non-operational areas (as well as the slip for ship access to the plant) are borrow pits. As mill operations proceed, the pits will be filled with waste to create more usable ground.

Because earthmoving operations would affect a substantial portion of the site, the best basis for earthwork computation was deemed to be a good topographic map of the whole area. Payment is on the basis of fill in place. Piecemeal preliminary cross-sections of the fills would have been not only inefficient, but also time-consuming. So, upon satisfying themselves that an aerial survey of the undulating terrain could be done with sufficient precision, U. S. Steel's engineers hired a commercial photogrammetry firm to fly the site and to make a map with 2-ft. contours.

Quickly prepared, this map became the basis for earthwork estimates as well as for final computation of quantities.

Quick payment methods — Because most operational areas are filled to a uniform 20-ft. level, it has been possible to set up an earthwork computation system that eliminates time-consuming figuring (and slower pay for yardage) once the fill is in place. The work site is divided into sub-areas, each of which has an average natural ground elevation. The difference between this average and the final elevation is made a common factor, which when multiplied by the area of completed fill yields the payment volume.

While this method may yield non-precise results in individual payment periods, it comes out all right in the end.

Of course, it was necessary to spend computation time in fixing the average elevations for sub-areas, but that was early in the game when there was no contractor-pressure for estimates.

• **Earthmoving** — The borrow pits' great length and shallow depth, as well as the material (mostly granular) established the primary excavation method: dig with big elevating loaders and carry with bottom-dump wagons. This applied to the larger pits. In smaller pits and for foundation excavation, scrapers of various types were to do the job. Subcontractor for general excavation is C. J. Langenfelder, Baltimore.

A typical Langenfelder major-equipment list includes: two elevating loaders with 48-in. belts; 35, 15-yd wagons; 6, 20-yd scrapers; 2, 17-yd scrapers; 12, 12-yd scrapers, eight of them handled by two-wheel tractors. Assorted cranes, shovels, back-hoes, bulldozers, and smaller trucks bring the number of units up to 165.

Langenfelder works 10-hr shifts, six days a week. He illuminates night work with skid-mounted light towers. On a good day he moves more than 70,000 cu yd. Quantities, including those obtained by the prime contractor, run as high as 400,000 a week, with a "best day" of 83,500 cu yd.

General fill is compacted in 6-in. layers—primarily by wheel-action of the earthmoving equipment, although there are pneumatic and tandem rollers on the job.

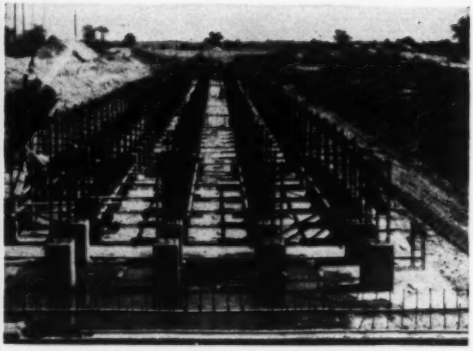
Earthwork involved a substantial amount of rehandling—particularly for building foundations below filled ground. In most cases it was considered more economical to fill whole areas by mass methods, then come along and pull out the earth where necessary.

• **Wellpoints required**—Filled ground stands up well in cut, but there is a water problem in excavating below old grades. The natural water table is at El. 5, and most spread footings or pile caps go to about El. 0. (Some deep foundations go to $-15\frac{1}{2}$ ft.) Generally sandy soil in the footings areas has made wellpoints the logical means for keeping work dry.

The first wellpoint system, consisting of 4,350 ft of 12-in. header with 23-ft points at 10-ft intervals, was installed at El. 8 for foundation work in the 10,000 x 2,400-ft sheet and tin area. This system pulled water to a range between El. 0 and −2. (And it lowered the plant's general water table to +3.) A separate system for a small deep excavation had its headers at El. −2, with the points on 2.5-ft centers. Three pumps handled the

CONSTRUCTION FOR STEEL: This is the second of a series of articles describing construction problems incidental to America's present expansion of its steel capacity.

SPREAD FOOTINGS are used where the underlying soil has a bearing capacity sufficient for the building loads.



CLOSELY SPACED pedestals rise from structural mat of coke oven foundation. This area had been well-pointed.

BLAST FURNACES are heaviest structures in the plant. Albert Berdis, Fairless Works' general superintendent, stands among blast furnace piles, a few of the 20,000 required for the project.

CONCRETE FORMS are versatile metal-bound plastic-faced. Expected to yield 30 re-uses, they were chosen because one man can handle a unit. This is a blast-furnace-stove foundation.

sheet and tin assignment, discharging through a manifold to 1000 ft of 22-in. pipe leading to the Delaware River.

At the same time, a smaller wellpoint system dewatered foundation work in the coke-oven aera. Subsequently the wellpoint equipment has been transferred to other areas, particularly the open-hearth and hot-strip.

• **Miles of piles**—Not all ground and load conditions have been adaptable to spread footings. At random points in the large mill buildings, it has been necessary to place column loads on piles, and in the open-earth and blast-furnace areas, load concentrations are so high that piles are the only answer.

Pile types and capacities already have been mentioned, but the total footage is their most impressive feature. About three-quarters of a million feet of piles have been driven. There are 4,100 individual piles in the blast-furnace area alone, and their tip elevations vary from −35 to −40 ft. Spacing of 12-in. piles for each furnace proper is 3½ ft both ways (all plumb).

Piledriving was performed by five rigs of various types. The prevailing hammer was single-acting, delivering 15,000 ft-lb per blow. Good 8-hr. performance was 30 to 35 piles.

Concrete forms efficient—Pile caps and spread footings, plus other building elements up to grade, will take 700,000 cu yd of concrete. Form contact area will be about 10,000,000 sq ft. With so much concreting to do, Walsh made a thorough study of forming systems and selected a metal-bound plastic-faced plywood type.

The plywood is ⅝ in. thick, slightly chamfered at all exterior edges and coated on one side. Lightweight angles, punched for connections, stand on the uncoated side flush with the plywood to reinforce the edges. Lightweight tees provide interior stiffening at one-foot spacing.

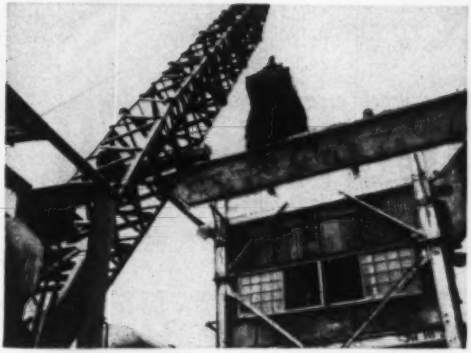
Panels are of standard 1, 2 and 3-ft widths, each in combination with 3, 4, 5, 6 and 7-ft lengths. About half of the panels bought for the job are 3 x 4 ft. This panel weighs 45 lb., which can be handled by one man.

Man-handling was an important consideration in the form selection. With so many relatively small units to be formed—column footings and pedestals for instance—it would not have been economical to crane-handle heavy units. Many small cranes would have had to move quickly from spot to spot, establishing not only a difficult scheduling job, but also a traffic problem.

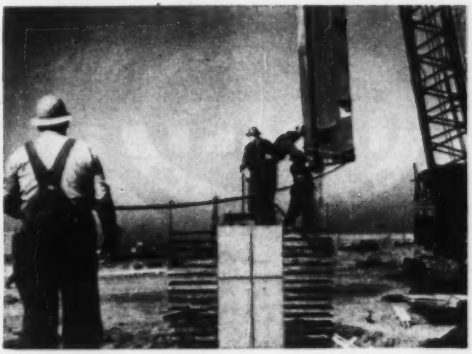
Small steel forms were out because their cost was greater, and steel was tight.

And regular wood forms were not adopted because enough workmen with requisite skills were not available in the Morrisville area. Connecting the plywood steel panels takes little skill and little time.

• **Re-use 30 times**—The contractor expects to average 30 re-uses of his steel-bound plywood forms. This is high compared to ordinary re-use experi-



BATCH PLANTS—this is one of two—must feed 500,000 cu yd of materials through transit-mix trucks to building sites in less than a year. (U. S. Steel photos.)



SUBSTRUCTURE CONTRACT'S OBJECTIVE—to make way for the superstructure contractor. Here, American Bridge Co. crews set first column in sheet and tin area.

ence with wood-framed plastic-face, even considering both-side use of the latter. But the main drawback of wood-framed plastic is that its edges are likely to be damaged in stripping long before the face goes. Metal frames cut out much of this damage.

• **Designs accommodate forms**—Once the one-foot-multiple form unit was adopted, there was opportunity for field-and-office cooperation in the interest of still greater efficiency. Footings, pedestals and other elements were designed or redesigned in size multiples of one foot. In most cases the cost of a little more concrete is more than offset by the saving in labor on the forms.

One of the few places where the standard forms are omitted consistently is in keyed and doweled construction joints. Here, rather than drill a panel for dowels, the contractor provides regular carpentered lumber forms.

• **New bar code saves steel**—Another design and construction efficiency lies in the reinforcing steel design. Engineers took advantage of the American Concrete Institute's new building-code provision allowing increased bond for deformed bars (ENR, March 1, p. 23) and consequent omission of many hooks. They used a high proportion of straight bars on the job. This cut down on bending costs as well as on the amount of steel required for the job's half-million yards of concrete.

• **Concrete plant**—Such a quantity of concrete is by no means small, especially when it must be furnished to hundreds of individual places around the three square miles that contain most of the construction.

The best approach to concreting seemed to be to establish a setup similar to that of a small city's ready-mix merchant. Walsh let a subcontract to Cooney Bros. of Tarrytown, N. Y., who put up two 200-yard-per-hour batching plants. These plants serve 22 mixer trucks. Concreting began March 21, just three weeks after ground was broken.

By the end of June these concrete trucks were handling assignments in almost all construction areas.

• **Waterfront facilities** — One area, however, had not been used for anything but shallow borrow by that time. That one was the waterfront slipway, on the Delaware River, adjacent to the blast furnaces at the site's south side.

Eventually, ocean-borne iron ore will come to the plant at this point. Principal sources of ocean-going ores will be Venezuela, where, like Bethlehem Steel Co. (ENR July 12, p 35) U. S. Steel has large iron ore concessions.

The initial plant's operation will be supplied by continental ore, which, along with coal and limestone will come to the plant from domestic sources by train.

Present slipway excavation plans call for a depth of 27 ft below msl. Bulkheads for the slipway will be a capped sheetpile structure tied back to a deadman wall. Slipway depth is consistent with the existing 25-ft channel between deeper water at Philadelphia and the port of Trenton. If the channel is deepened to 40 ft, to accommodate 35-ft-draft large ocean-going ore boats, the slipway also will be made deeper. Rough estimates have it that there are 2,000,000 yd of rock to be removed if the channel is deepened. Two bridges also have to be altered to clear the ore boats safely.

• **Water supply**—The Delaware River has a 7-ft freshwater tide at Fairless Works. Presence of this abundant water supply was one of the factors of the site choice. It is planned to pump 230 mgd of river water through the plant for processing. Most of this will be taken directly, run through settling basins, and used for cooling purposes. More river water will be taken by infiltration from sands near the river bank, further clarified and used in sheet and tin processing. In addition, 5 mgd will be taken from wells, and used for domestic purposes. About 242 mgd will get back into the river. Separate treatment facilities will care for different kinds of waste.

• **Direction**—Initial direction of the work for both U. S. Steel Co. and National Tube Co. was under J. D. Rollins, project manager. In July, Stephen Curtis, who had been chief construction engineer for the U. S. Steel part of the job, became project construction manager. Assistant chief construction engineers for U. S. Steel are H. H. Kelso, R. B. Jordan, and J. T. Seaman. At National Tube, E. R. Evans is chief construction engineer and H. G. Quail is his assistant. On the operating side for U. S. Steel Company, A. J. Berdis is general superintendent, and T. C. Beattie is general superintendent for National Tube Co.

The contractors associated with Walsh are S. J. Groves & Sons, Inc., Minneapolis; B. Perini & Sons, Inc., Framingham, Mass.; and Slattery Construction Co., Inc., New York. Harry Dugan is project manager, and John J. Murphy is assistant project manager.

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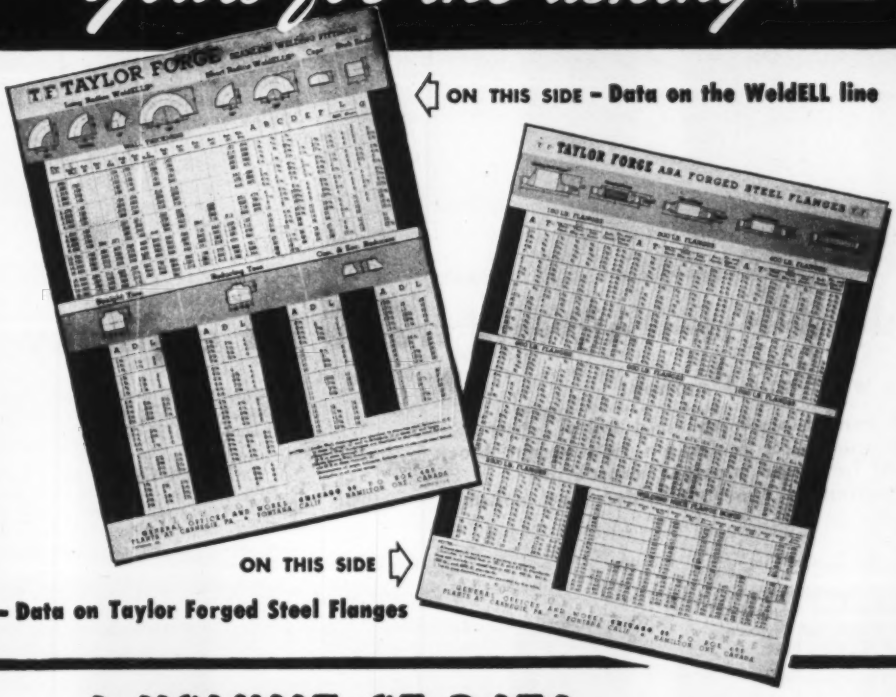

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ALUMINUM FACING on window walls of Mayo's new 11-story clinic building in Rochester enabled designers to eliminate 280 tons of structural steel.

Designing a structural frame for economy

Here's what saved money:

- **High tensile strength field bolts**
- **Aluminum wall facing on lightweight block**
- **Metal lath and plaster fireproofing**
- **High-strength concrete under steel columns**

E. L. Gardner

Chief Structural Engineer
Ellerbe and Company,
Architects and Engineers,
St. Paul, Minn.

THOROUGH COST COMPARISONS of competitive building materials do pay dividends in economy without sacrificing quality. Results are often surprising, as they were in designing the new Mayo Clinic Diagnostic Building in Rochester, Minn.

Eleven stories of the steel-frame, concrete-floor building are now under construction. The eleventh floor will house only mechanical equipment. The steel columns are designed for the addition of ten future floors.

Development of the structural system began with investigations to determine which of the many possible solutions would prove most desirable. Analyses were also made of lightweight materials, welding, riveting and bolting to determine their economic influence on the finished structure.

Biggest surprise of all was that conventional concrete in the floors was more economical—from an overall job-cost standpoint—than was lightweight concrete. This was due chiefly to the high cost of producing lightweight concrete in the area. Field riveting was ruled out from a noise-nuisance standpoint. Field welding, turned bolts or structural bolts for field connections figured higher than high-tensile bolting—the method finally selected by the designers.

• **Specialized type of building**—Each floor will be an intricate arrangement of specially designed rooms to be occupied by the diagnostic facilities of the clinic. Cross-shaped in plan, each floor contains about 49,000 sq ft of area. There is a partial sub-basement, a full basement, and also a partial mezzanine floor between first and second floors. The first, mezzanine, and second floors will be devoted to clinic administration and medical records. The third floor will be used for X-ray. The remaining seven floors will consist of special rooms for clinical pursuits.

Located on a level, one-block square area in the business district of Rochester, the new building will be linked to the present clinic on the east by a concourse under the street. Service and power tunnels will extend to the Franklin heating station, now being enlarged.

Traffic between floors will be handled by 10 patient elevators, four staff elevators and one freight elevator. Space and framing is provided for 11 future elevators. Provision also is made in the framing for escalators between the end of the concourse in the basement and the first floor.

If it becomes necessary to add the ten future stories, the building will be 279 ft. high, including a 21st floor central section to house elevator machinery and mechanical equipment. The east and west exposures will have a surface area of 33,600 sq ft; and the north and south 37,000 sq ft.

• **Why steel was used**—Requirements for future stories, together with space allocations for columns made it unnecessary to consider any material other than steel for the main structural frame.

Foundation designs required no significant departure from customary methods. Foundation explorations located bedrock at basement floor level, the rock having a varying top surface contour. Steel columns extend down to the bottom of the basement floor and column loads are transferred to the rock by unreinforced concrete pads.

Considerable base plate tonnage was saved by utilizing a high bearing stress under the plates, made possible by using 4,000-psi concrete in the pads.

Columns were designed for a live-load reduction based on the contributory area method. Most of the lower-tier columns are 14-in. high-strength steel sections. Some interior columns required alloy steel cover plates.

• **Fireproofing comparison**—The building will be air conditioned, with duct space provided between bottom of structural floor system and suspended ceiling. Fireproofing requirements of this space ruled out any possibility of using steel floors or bar joists.

The cost of double plaster fireproofing for the underside of any light steel framing ran the cost of this type of floor system well over that using the conventional pan-type slab and concrete joists. The concrete joists are carried by structural steel floor beams between columns. Concrete testing 3,000 psi at 28 days will be used in the floor slabs and joists.

Claims for spectacular savings in the weight of structural steel achieved through the use of lightweight concrete for floors and fireproofing was an attractive incentive that merited investigation. Density and strength are inseparable functions in any concrete mix. The strength required for the spans involved necessitated a fairly high density for lightweight-aggregate concrete, which ate away some of the weight savings. It also required two more sacks of cement per cubic yard than conventional sand-and-gravel concrete.

These facts combined with the high delivery price of lightweight aggregate would have resulted in an additional building cost of $3.00 for every $1.00 worth of structural steel saved by using lightweight aggregate, the designers report.

Lightweight-aggregate concrete will save structural steel weight and the savings will result in a lower building cost only where the aggregate can be obtained without high shipping and handling costs. Slag aggregate is available in this area at fairly reasonable costs, but the supply is undependable and no supplier could be found who would underwrite deliveries in amounts that would be required. Most natural lightweight aggregates originate in the southwestern states, and their high delivery cost to projects in this locality could not be justified in the final cost analysis.

Bidders were given the option of using conventional concrete fireproofing all around the structural steel floor beams or resting them on shelf angles and fireproofing the lower part of the beams with metal lath and plaster. Figures made available by the contractors showed considerable savings by using the latter method. This saving was achieved mainly by eliminating the high cost of building wood forms around the beams.

The exterior walls where windows do not occur are faced with large slabs of granite and marble. The stone is supported at each floor by shelf angles attached to the spandrel beams.

The stone is backed-up with brick. Brick weight is required to bring the center of gravity of the wall into the middle one-third and back off the toe of the shelf angle. Stainless steel anchors will be used to tie the stone to the back-up. A horizontal joint for vertical contraction is provided under the shelf angles at each story to compensate for the shortening of columns under load.

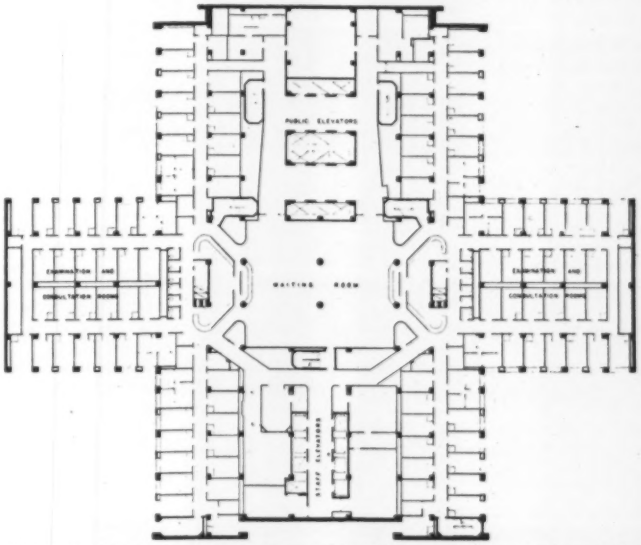
• **Aluminum wall facing** – Exterior walls where windows occur are to be faced with aluminum and lined with lightweight blocks. A saving of 280 tons of steel was made by using aluminum facing, which, at the same time, produced an architectural appearance agreeable to both the designers and owners. About one-half the exterior walls are aluminum.

The aluminum facing is secured to light steel framing between the structural floor and the underside of the spandrel beams. Several lining systems and methods of installation—including tilt-up precast slabs and lightweight blocks—for the walls behind the aluminum were submitted to the contractor for cost estimates. The lightweight blocks, 8-in. thick, met all requirements for insulation and space saving, for less cost.

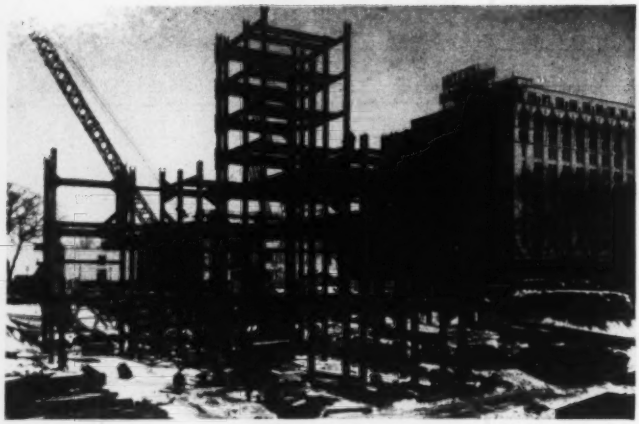
• **Noise ruled out**—Because of the building's location it was necessary to eliminate all unnecessary and disturbing noise without placing a greater premium on silence than that provided by economical methods. Three hospitals and four hotels are located within a two-block radius. Riveting did not merit recommendation under the circumstances.

Cost comparisons were made of a welded and riveted design for a typical floor. Full advantage was taken of the

BEDROCK AT BASEMENT LEVEL simplified foundation problems. Considerable base-plate tonnage was saved by setting structural columns on high-strength concrete pads.



CROSS-SHAPED IN PLAN, each floor contains 49,000 sq ft of area to be served by 15 elevators, with provisions for installing 11 more if additional stories are added.



STRUCTURAL FRAME has friction-type connections made with high-tension bolts. Thermal difficulties of welding heavy steel sections in sub-zero weather was a big factor in decision to adopt high-tensile bolting for field erection.

weight reduction that is feasible by rigid-frame design with welded connections. These studies revealed the saving in steel weight was not substantial enough to effect a saving in the finished structure by welding.

No satisfactory method could be found for field welding structural steel beams to the alloy steel columns that the limited space requirements demanded. Moreover, much of the steel erection was planned for cold weather. Overcoming the thermal difficulties that are invariably present when welding heavy steel sections in low temperatures was another difficult problem to cope with satisfactorily without increasing the final cost.

After investigating rivets, structural bolts, welding, and high-tensile bolts, it was found that high-tensile bolting of the field connections is the most economical method of meeting the conditions that pertained to this project.

A trial design of a typical wind connection revealed that ordinary structural bolts were not feasible. Turned bolts and reamed holes were possible but expensive. High-tensile bolts are being used in a number of structures under construction. Experimental laboratory bulletins of the University of Illinois and the American Institute of Steel Construction were the sources of design information.

• **Design of a high-tensile bolt**—Designing a high-tensile bolt joint entails about the same procedure as that for rivets. However, shear and bearing factors do not have to be considered. The frictional resistance between the surfaces of the connected steel determines the resistance of the joint. (ENR August 2, p. 35). Laboratory tests indicate that the rivet values in shear approximate very closely the frictional value between plates in a high-tensile bolt design. One high-tensile bolt is about equal to one rivet of like size. The resulting design procedure becomes quite simple.

Bolts with a minimum yield point of 90,000 psi. are being used in all field connections. All shop fabrication is riveted. Bolts are torqued to a minimum of 525 ft-lb, which amounts to a tension of 35,970 lb. A $\frac{7}{8}$-in. bolt torqued to this value will have a stress at the root diameter of the threads of 86,000 psi. A carburized washer is placed under the head and one under the nut of all high-tensile bolts. Bolt holes are made $\frac{1}{16}$ in. larger than bolt diameter.

Bolts are tightened with pneumatic wrenches. Automatic wrenches that measure torque for large bolts are not yet available. The proper tension is obtained and maintained by calibrating torque against air pressure for the wrenches used, and then maintaining the proper air pressure.

• **Checking bolt torque**—The torque is checked by calibrated hand wrenches. Considerable confusion can result if the torque is not measured properly. Results would be erratic and unreliable if measured by loosening the nuts. The recommended procedure is to place a witness mark on the nut and a corresponding mark on the plate, loosen the nut and then read the torque required to bring the nut back to its original position.

Wind loads recommended by the U. S. Bureau of Standards vary according to height above the ground surface. However, 30 psf—the average pressure for heights under 300 ft—was used in this design.

The wind stress analysis was based on a rigid frame with each joint in the outside walls resisting an amount of wind in proportion to its relative stiffness.

All interior connections in the structure are standard and were assumed to have no wind resistance. The floor construction was used to transmit the wind load to the outside wall columns and beams. It was found that 20 rivets or bolts per ton of steel could be saved by taking all the wind load in the outside wall framing instead of making every joint in the framing a wind connection. This permitted 7 floors of interior framing to be made typical instead of varying from floor to floor. The difference in spandrel beam sections and wind connections was covered by schedules.

Haunched beams were used in the spandrels to resist the wind loads. Haunches were made by attaching large gusset plates and angles to the top and bottom of wide flange beams at the end connections to the columns. Moment distribution with relative stiffness factors was used in determining the column and spandrel beam stresses.

Excavation for the structure was started Aug. 1, 1950, and steel erection began last Feb. 1. Estimated completion date for the 11-story, $12,000,000 structure is June, 1953, with partial occupancy beginning in December, 1952.

• **Contractors and designers**—Allied Structural Steel Companies, Chicago, hold a contract for fabrication and erection of the structural steel, which includes 8,500 tons in the main structural framing. The Holman Erection Co. are sub-contractors on the steel erection. General contractors are Stocke and Olson, Rochester. Gus Olson, partner in the firm, is construction superintendent.

Ellerbe and Company, Architects and Engineers, St. Paul and Rochester, designed the structure and are furnishing field inspection on its construction. Robert Palmer is resident engineer and D. M. Robbins, assistant resident engineer.

Spillway discharge figures

A decimal point was misplaced in the article on spillways in our issue of June 28. In the first column on page 31 the first full sentence should read "Thus a discharge of 1,000 cu meters per second (35,300 cfs) can be obtained with a depth of only half a meter (19 in.) over the crest."

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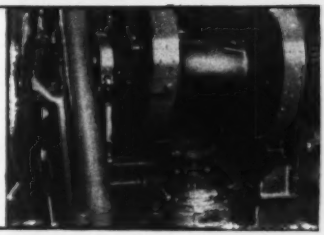

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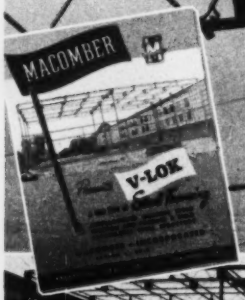

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Shaft excavation begins for 5-mile, 45-ft dia tunnel as . . .

Ontario goes after new Niagara water

FAMOUS FOR ITS ABILITY to get things done, the Hydro-Electric Power Commission of Ontario isn't hurting its reputation a bit at Niagara Falls.

In that Canadian city, the commission already has a good start on $157 million worth of construction that will put to use a share of international water that became available only last October.

To carry 20,000 cfs from a point above Niagara Falls to a new 450,000 kw generating station on the gorge wall five mi below the falls, the project includes:

1. 3,800 ft of cut and cover channel from intake. (Still under study.)

2. 24,900 ft of pressure tunnel, of 45-ft finished diameter, in places more than 300 ft under Niagara Falls, Ont. (Tunnel intake and discharge connections incline 30 deg from the horizontal.)

3. 13,000 ft of open channel to hydro plant forebay.

4. Power plant (Sir Adam Beck-Niagara Generating Station No. 2.)

Water for the project was made available by a new U. S.-Canada Treaty ratified Oct. 10, 1950 (ENR Nov. 2, 1950, p 17). Ontario Hydro lost no time in going after the Canadian share, in January of this year starting excavation with its own forces at the open-channel and powerhouse sites.

Then in the spring, having completed design for the tunnel, the commission awarded contract for two 2½-mile sections. The upstream section went to Rayner-Atlas, Ltd., an all-Canadian firm; the downstream went to B. Perini and Sons, Inc, Walsh Const. Co. and Canadian-American contractors (Perini-Walsh).

Each section is driven both ways from each of two shafts. Shaft excavation began the first part of July.

• **Another tunnel later**—Permanent shafts, of 30 or 32-ft finished diameter, are offset 125 ft from tunnel centerline. Purpose of offsetting the shaft is to provide access to a second tunnel to be built under a subsequent project.

Shaft depth will range from 210 to 330 ft in conformity with tunnel grade.

• **Tunnel under strong roof**—Tunnel grade, in turn, is governed by site geological conditions. Engineers deemed a 10-ft stratum of Irondequoit limestone to be the most reliable tunnel-roof material at economic depth so they placed the tunnel just under that stratum. Slope of the tunnel follows the local formation's slight north-south dip—28 ft to the mile.

Below the limestone, tunneling will proceed in the following strata, reading downward: Dolomite, 12 ft; shale (with a tendency to slake) 6 ft; and sandstone to the invert. The contractors are expected to encounter pockets of hydrogen-sulphide gas, which is typical in the area's formation. This will increase the ventilation problem.

Above the roof stratum, where shafts will be sunk, are reading upward, 56 ft of shale, 9 ft of dolomite, 35 ft of limestone, and top layer of dolomite and soil.

Tunnel cross-section is circular with a 49-ft 8 in. dia of minimum excavation or "A" line and about 51 ft dia of maximum pay, or "B" line. Roof support will be provided throughout. This will consist of H-section ribs on nominal 4-ft centers, lagged and blocked as necessary for stability.

Excavation will proceed in a top heading, down to the springline, followed by bench removal. This is similar to the method Perini and Walsh used for the 40-ft finished dia. Downsville Dam diversion tunnel (ENR Jan. 20, 1949, p. 78).

Estimated yardage for tunnel excavation is 2,000,000. Ontario Hydro will furnish 440,000 cu yd of tunnel-lining concrete from two plants along the location.

Contractors expect to turn into headings next January, and are scheduled to complete their work by the spring of 1954.

During that year, three units of the six planned for installation in the new generating station will be placed in service.

CANAL ROCK breaks easily with light blasting; makes good mucking for shovel. (Ontario Hydro photos.)

• **Force account work**—Construction at the generating station already is started. First site operations were the construction of two means of access to the new power plant site. The first, an extension of existing southward access to Station No. 1, was a Bailey bridge that was cantilevered outboard from the older plant, over its tailrace. The second was a shelf road running northward down the gorge wall.

Penstock tunnels under a gorge-rim parkway already are nearing completion. Behind these is the forebay. To be inter-connected with the Station 1 forebay, it is well under way. Excavation for the power canal to the power plant forebay also shows good progress.

This canal has a rectangular section in rock and a trapezoidal section in old fill (deposited several years ago during excavation for the canal to Station No. 1).

Canal carrying capacity will be 40,000 cfs—twice the present project's requirements.

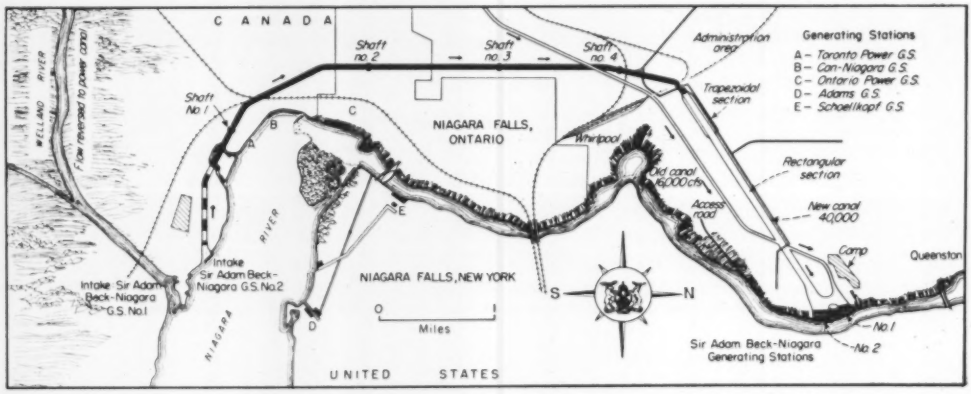
• **Easy digging**—In rock, the canal's cross-section is 200 ft wide by about 70 ft deep. Rock's thin sedimentary layers make it easy picking for blasting and mucking crews. Light charges in holes 20 ft spring large volumes, heaving uniform ridges of broken rock half again as high as the blasted depth. Secondary blasting isn't needed.

• **Hydro city**—Another feature of the work is the construction of three main camps for workers. To accommodate 3,000 men, these camps will have their own fire protection, utilities, and a 30-bed hospital.

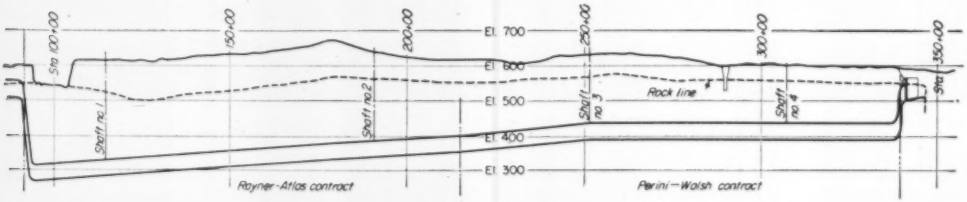
• **Management**—Project manager for the Hydro-Electric Power Commission of Ontario is Gordon Mitchell. Lou Gallagher is general construction superintendent; W. L. Fraser is field project engineer, assisted by W. M. Hogg.

Rayner-Atlas, Ltd., is composed of the Rayner Const. Co., Ltd. of Toronto, Ont. and Atlas Const. Co. of Montreal, Que. Hew Scott is project manager.

Perini-Walsh include B. Perini and Sons, Inc., Framingham, Mass.; C. A. Pitts, Ltd., Toronto; Walsh Const. Co., Davenport, Iowa, Arthur A. Johnson Corp., Long Island City, N. Y.; Morrison-Knudsen of Canada, Vancouver, B. C.; Henry Kaiser Const. Co., Oakland, Calif.; Kaiser Industries, Inc., Oakland, Calif.; Mannix Ltd., Calgary, Alta. J. R. Glasser is project manager.

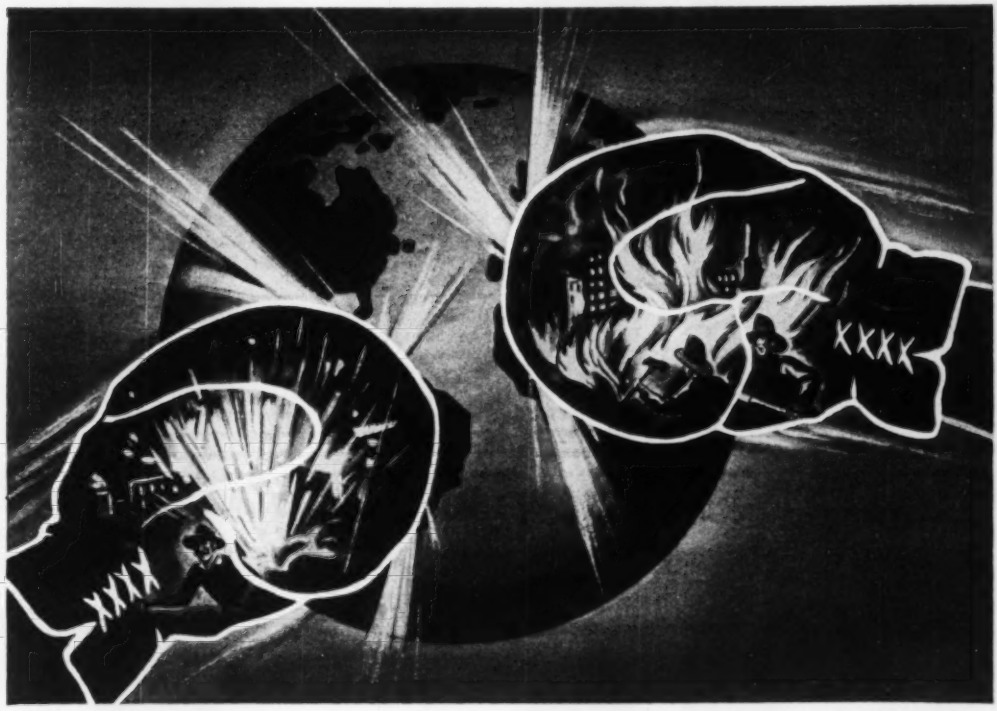


HYDRO POWER will be generated by new water at Sir Adam Beck-Niagara Generating Station No. 2 (right). Map shows tunnel and canal location. Old canal will be interconnected with new at the forebay above generating stations.



PROFILE ON CENTER LINE

TUNNEL PROFILE was selected on basis of geological conditions. It follows the prevailing local dip, and lies just beneath a strong limestone stratum, which affords a good roof.



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COMPLETE INSURANCE COVERAGE IN FOREIGN LANDS

Ground conditions vary all over site for foundations on this relocation job

L. A. MEYER, contractor's superintendent said: "We put this one down 304.3 ft. That's a record, isn't it?"

"MIGHTY PECULIAR driving conditions on this Meadville job."

It was J. A. Meyer, superintendent for S. J. Groves & Sons Co., speaking. He was showing his job to an ENR editor who had hurried to the northwestern part of Pennsylvania when he heard about Groves driving a 14-in. H-pile 304.3 ft.

"Pile lengths average about 170 ft., but we get differences as much as 100 ft. between piles next to each other.

"Now this 304-ft. pile," he said, patting its top with pride and some bafflement, "We were trying to get 42 blows per foot. That gives us 72 tons bearing by the ENGINEERING NEWS-RECORD formula. We just kept putting on more sections and driving them. It stood perfectly straight in the leads, and we never got the kind of a hitch that might mean we were hitting a boulder. When we got it where it is, we quit for the night. It was still only taking 30 blows to the foot."

"Next morning we figured it for 87 tons after giving it five blows. We were afraid to hit it any more because it might unfreeze."

• **Road relocation job**—The long pile is in the south abutment of a five-span bridge that crosses French Creek and the Erie Railroad at a 30-deg. skew. The bridge, in turn, is part of a $3,775,000 state highway relocation job that eliminates a narrow bridge-and-grade-crossing bottleneck in Meadville. The new location comes in from the west (U. S. 6) looping around the south-west part of Meadville and entering the city near the middle of its south line.

• **Boring data**—State engineers anticipated that there would be a variety of driving conditions for piles to support the project's structures. Fifty borings, taken by Raymond Concrete Pile Co. before plans were completed, gave the warning.

An idea of the conditions on the job can be gotten from as little data as those of two adjacent borings for the south abutment, shown here. About 50 ft apart, the two became inconsistent a short depth below the surface. But heavy resistance to penetration took place at similar depth.

However, in about 25 other borings that were carried to stiff resistance depth varied from 45 to 185 ft. Qualitatively, it is difficult to find any correlation, even among small groups of borings.

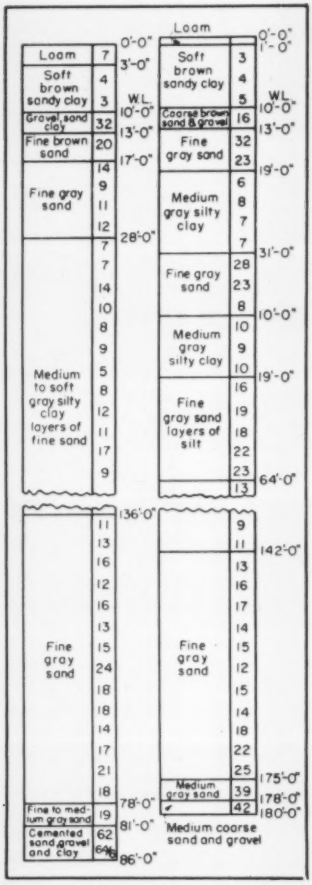
These borings were taken for a viaduct at the project's city end, as well as for the bridge. Work also includes 2 mi. of divided 4-lane concrete highway south and west of the bridge.

The bridge's north abutment and viaduct are supported on 40,000 ft. of concrete-filled pipe piles, driven by Raymond Concrete Pile Co. under a sub-contract.

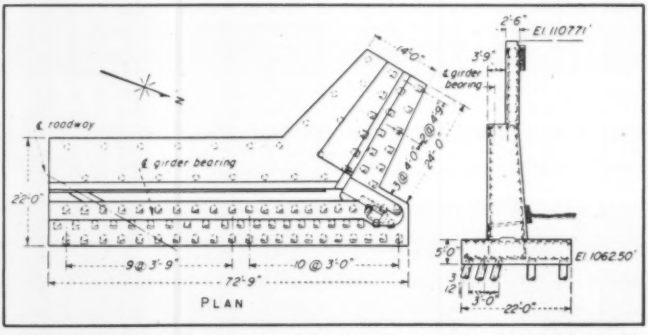
The south abutment and bridge piers are supported on 14-in., 102-lb. H-piles, driven by Groves. Maximum bridge plate-girder length is 235 ft. Estimated total H-pile footage is 80,000. Pier pile values are 60 tons and the abutment value is 72 tons, as Mr. Meyer states.

By specification, pile bearing values are determined by the ENGINEERING NEWS formula, modified for single-acting steam hammers as recommended by the makers.

• **South abutment toughest**—The ex-



SOUTH ABUTMENT BORINGS give idea of ground's varying conditions. Deep pile was near right-hand boring.



CLOSE PILE SPACING and increased bearing value are design features that enable Pennsylvania engineers to hold new embankment 35 ft high. Wing walls for other abutment half align with abutment.

We climbed to the top of the bridge and saw . . .

TO THE NORTH—Raymond's two-way-batter piledriving rig putting pipe casings in for foundations to carry viaduct and ramp down onto a Meadville street.

TO THE SOUTH—Two completed piers for 30-deg-skew bridge. Mr. Meyer said: "Over there on the other side of the river is the rig that drove the long pile."

AT SOUTH ABUTMENT, crane with 80-ft boom, 90-ft leads, drives an H-pile. To make batter, it booms down.

QUICK SPLICE of 65-ft section is made by welders in 15 min. Earth sank with driving, so laborers shovel fill. (ENR photos)

tra loading applies to 199 piles (see drawing) which will support a total abutment height of about 45 ft. All but 10 ft. of this height will have new highway fill against it.

Piles are driven by a single-acting steam hammer with 26,000 ft. lb. energy per blow. This hammer rides on 90-ft. rigid leads on a crawler-crane with 80-ft. boom.

• **Quick steam**—Steam comes from a portable 125-hp. quick-steaming boiler that can deliver 125 psi. one hour after firing. Normally, the boiler is kept warm overnight; then it can deliver steam in 15-20 min. The time is still shorter when "high flame" is used. High-flame fuel consumption is 40 gal. per hr. With the single-acting hammer, high flame is needed about a third of the time during driving.

Pile sections are 65 ft. long. Three diamond splice plates are pre-welded to lower ends of second and successive sections. The section then is set on the already-driven pile and welders go to work. At first the splice took an hour, but normal time now is 15-17 min.

Plumb piles are placed by leads, the splice is tack-welded, then, while the driver moves to another position and works on another pile the weld is completed. Batter-pile sections, however, must remain latched in the leads during welding. Daily pile footage averages about 600, a "best day's record" being 869 ft.

Despite the ground's heterogeneous nature, driving experience is relatively uniform. The first length practically falls in. The next one takes up slowly, ranging from 15 to 25 blows per minute. The third goes at 35 blows, then takes up in the last 4 ft.

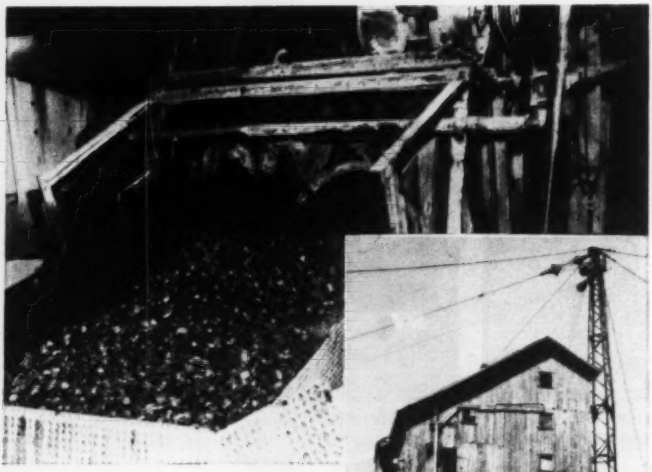
• **Subsidence problem**—A curious thing takes place at about 40-ft. depth in a few zones. The ground settles with the pile. In one area covered by four piles, ground settled an average of 3½ ft., the maximum being 6 ft. It took 20 cu.yd. of dirt to bring the zone back up to excavated grade.

This condition would appear to indicate small pockets of loosely deposited granular material. How such a condition, on a larger scale, was coped with by Vibroflotation is described in the ENR June 23, 1949, issue p. 60.

(What apparently is a similar condition is giving trouble at a nearby factory, where stamping machines have been undergoing continuous settlement over a long period, resulting in frequent and expensive re-leveling work.)

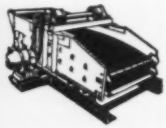
So far, the shallowest H-pile is 114 ft., the nearest to 304 ft. being 246 ft. Concrete-filled piles have ranged from 18 to 157 ft. in length the contractor reports.

The Meadville relocation is wholly financed by the Commonwealth of Pennsylvania. For the Department of Highways, H. G. Mitchell is resident engineer. Construction is under the general management of F. H. Hiestand, S. J. Groves' manager in Syracuse, N. Y. (Groves' home office is Minneapolis.) With Mr. Meyer on the job is Andy De Simon, field engineer.



Screen cloth life is "very satisfactory" and so is the life of the Deister machines, reports owner of the Steiner Sand and Gravel plant, West Milton, Ohio. One Deister replaced an unsatisfactory unit of another make in 1944, and their second Deister replaced the original Deister which took daily punishment at the Steiner plant for 21 years.

21 YEARS CONTINUOUS OPERATION



That's right . . . it took 21 years daily punishment to wear out the original Deister Screen in the plant of the Steiner Sand and Gravel plant near West Milton, Ohio. That's why the Steiners, Walter J., and son, Richard, chose another Deister.

The Steiner plant utilizes two sizing screens—both Deisters—in this 650 tons per day capacity plant. Screens have to be good, to produce uniform results, because aggregate processed comes from three separate sources and varies widely. The 3 x 6 Deister 3-deck screen was bought in 1950 to replace a similar Deister which had been in continuous use since 1929. Their 4 x 10 4-deck Deister Screen was purchased in 1944 to replace one of another make that had been giving excessive bearing trouble.

Deister screens have long life and they give screen cloth long life. They belong in your plant. Get the facts from your Deister dealer—or write direct to the factory.

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READER COMMENT

On soil conservation

Sir: Your August 16th "Perspective" page suggests a reply to balance a premature implication leading to much more wasteful spending. Engineering must be more factual and not just imitating of political expediency.

Note that "Perspective" rather condemns soil conservation practices. It would be foolhardy to indicate that the country at large or the area involved was well near complete operation under such a valuable plan. Some of us in the engineering field and many real agriculturists know that most of the farm land needs much more in the way of conservation. Proper treatment of the soil on all farms will be very valuable in aiding our diet nutritionwise and retaining of water on the farm.

Unless you retain that top soil the dams are going to become silted-in with it. This reduces the period of effectiveness of the structures.

Floods always have the aspect of not being "man made" and possibly will never be entirely man controlled. How can you flood one area to protect another sensibly—except where only wasteland is to be taken out of use for dams? Surely we do not expect to control typhoons; and possibly it is impossible or unreasonable to expect to construct dams which will eliminate all contingencies even though their catastrophic impact is overwhelming. Political wastefulness backed by engineering advice may eventually discredit the profession.

Let's expose all sides for more inspection.

M. B. ZEINER
Zeiner Construction Service
Des Moines, Iowa

(ENR did not consider it was condemning soil-conservation practices, in fact it has long advocated them. What was pointed out was lack of effect of such practices in controlling major floods. It seemed to ENR that the proper engineering approach should be the effect on flood control, rather than political expediency. EDITOR).

• **Setback for Buffalo plans**—Plans to straighten out the Buffalo River at Buffalo, N. Y., into a more useful artery of water commerce has been ruled out by the U. S. Army Engineers because the project would be entirely too costly. It would cost many millions of dollars to cut new canals from Buffalo harbor to the river, a U. S. Engineers report said.

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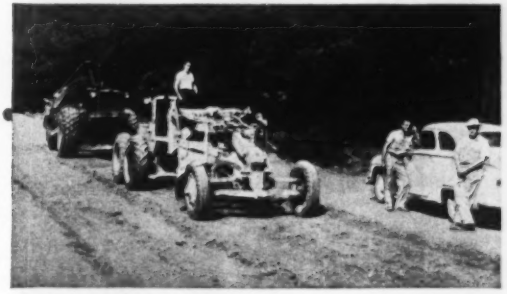
Job superintendent in the field calls headquarters 20 miles away. Via radio he can talk to foremen on other jobs in construction company work area.



Road grader, down for repairs, gets fast help from radio call to dispatcher describing trouble and requesting parts.

"Radio control saves us money every day we work," says Lee Blades of the Blades Construction Company, Hornell, New York. "We do road oiling, contractual work on bridges and highways, and operate a bituminous plant. Our jobs fan out in a 100-mile radius from headquarters, with crews and equipment spread over six counties."

Cut communication delay and you cut costs—in materials, in production, in manpower. In wide area operations, you need tight control. Why not talk it over with our G-E engineers—at no obligation? To get action, mail the coupon today.

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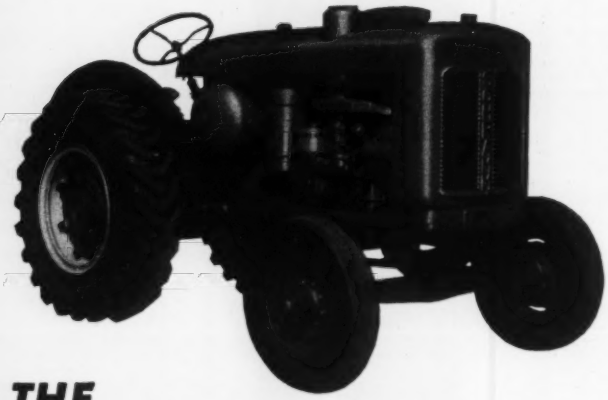
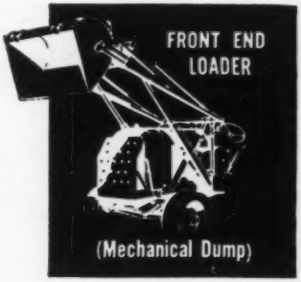
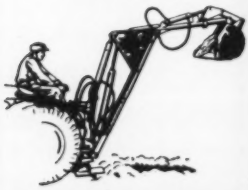
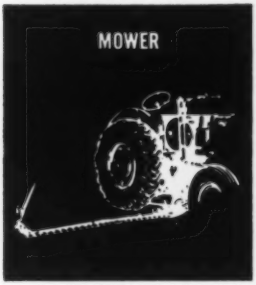




BACK HOE





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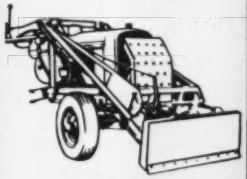
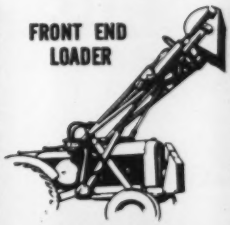


(Mechanical)

SCAFFOLD

FRONT END LOADER



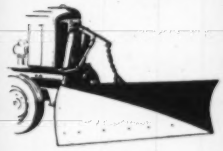
(Hydraulic Dump)

7' BACKFILL BLADE

(Hydraulic Angling)

TOWING TRAILER

SNOW PLOW REVERSIBLE



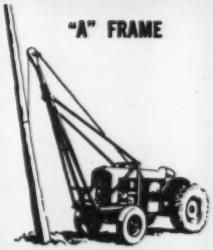
SNOW PLOW V-TYPE

POST HOLE DIGGER

REAR WINCH

FRONT WINCH

"A" FRAME



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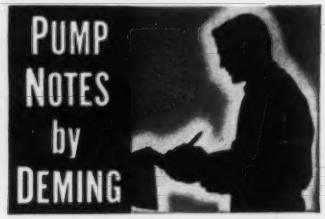

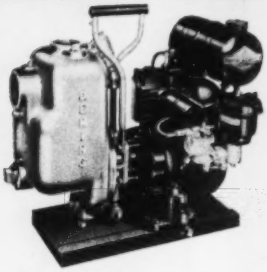

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Easily handled by one man, the Deming Fig. 3304 Self-Priming Centrifugal Pump illustrated is always ready for action on a wide variety of drainage and water handling jobs.

PERFORMANCE RATINGS

Gallons per Minute	Total Head in Feet
10	80
20	75
30	70
40	65
50	57
60	50
70	40
80	30
90	15

Fig. 3304 is a close coupled pump, made in bronze fitted, all iron, or all bronze construction, as required.

Impeller is mounted directly on engine shaft. Double mechanical type seals are furnished exclusively with all pumps.

Unit shown has Briggs & Stratton, Model "NP" 1½ H. P., 4-cycle, air cooled gasoline engine having a high tension magneto.

This is one of various types of Deming Self-Priming Centrifugal Pumps described in Bulletin No. 3300-B. Write for a copy.

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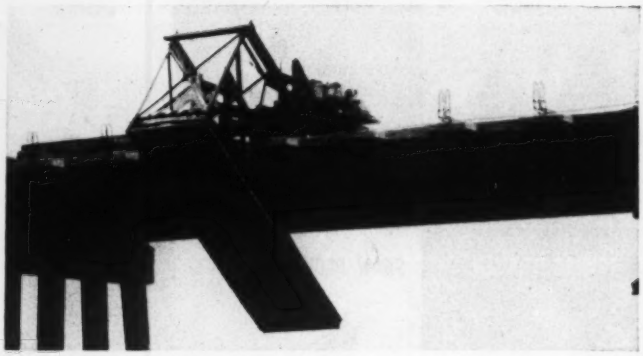
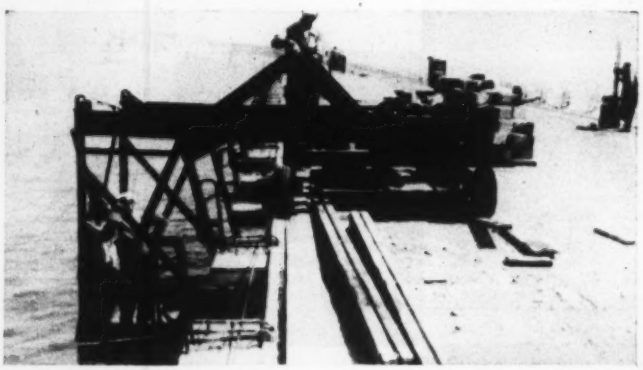
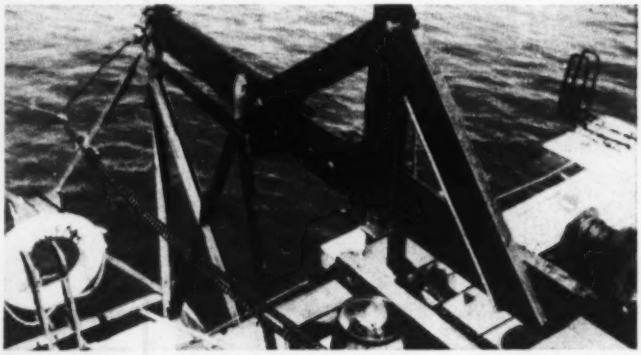


TO CLEAR BENTS of Chesapeake Bay Bridge approach, this cantilevered scaffold jackknifes downward. It was devised by Kaufman Const. Co., of Philadelphia, roadway subcontractor to Bethlehem Steel Co. on this 4-mile project. Kaufman is paving 67 approach spans like this one. (ENR Photos)



TO STRIP FORMS platform is fixed in horizontal position for access under new deck concrete. Two workmen counter-balance the frame while another inserts pins to hold the position. Platform extends halfway under two-lane bridge, is 5 ft wide. Car has 7-ft tread, carries 3 tons of counterweight.



TO FOLD SCAFFOLD downward for passing bents, chain hoist attached to car frame tugs sling that is attached to loops at outer end of platform's cantilever frame. Pin at top right is removed, to release outer top diagonal. Winch (right) pulls scaffold along bridge.

Faster Digging Teeth ...for Less Money

...to fit all dippers and buckets

Now stocked by dealers in every major city in the United States and Canada, *ESCO* adapters and box-type points will put speed in your digging and give you lower cost per yard.

ESCO adapters, which take the strain and shock of digging, are

Cast of shock and wear resisting alloy steel.

Heat treated for greater toughness.

ESCO box-type points fit the adapters perfectly, and are held securely in place by rubber plugs and alloy steel pins. Points are

Self-sharpening design, with flame hardened tips.

Quickly changed.

Stocked in four basic widths, with a variety of types for special purposes.

Available Now

ESCO bulletin 187, "*ESCO* Box-Type Points and Adapters", tells the whole story of these cost-cutters. Get your copy from your nearest *ESCO* dealer, or send us the filled-in coupon.

ESCO Dippers, Hoe Dippers, Dragline and Coal Loading Buckets

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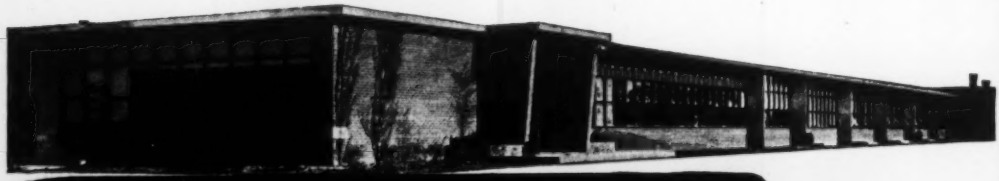
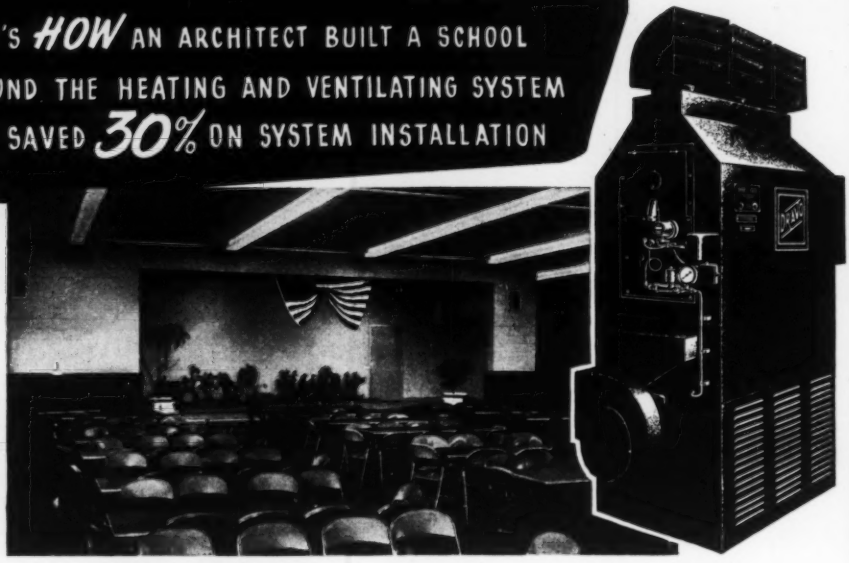


HERE'S *HOW* AN ARCHITECT BUILT A SCHOOL AROUND THE HEATING AND VENTILATING SYSTEM AND SAVED *30%* ON SYSTEM INSTALLATION



Listed by Underwriters' Laboratories

Approved by American Gas Association

Dravo "COUNTERFLO" Heaters operate automatically, provide constant-temperature fresh air to Hillsborough School.

When the Hillsborough, New Jersey, School was built, architect Jay C. VanNuys specified Dravo "Counterflo" Heaters and built the school *around* the heating and ventilating system, rather than trying to "fit" the system to the school.

Two direct-fired "Counterflo" Heaters, with an output of 1,750,000 Btu per hour each, heat 20,000 cu. ft./min. of fresh filtered air for the 21 rooms of the new school building during the winter months. In warm weather, these same heaters provide comfortable ventilation for the entire school.

The heating and ventilating system is thermostatically controlled and automatic in operation. The unique construction of the school eliminated the need for duct work.

THE RESULTS? The Dravo heater installation at 81¢ per sq. ft. cost 30% less than would a conventional "wet" system; heating and ventilating represented 7% of the total building cost.

Versatile Dravo Heaters can solve many school heating problems.

Dravo "Counterflo" Space Heaters are ideal for heating and ventilating such school facilities as . . . gymnasiums . . . auditoriums . . . stadium rooms . . . libraries . . . cafeterias . . . book stores . . . locker rooms . . . field houses . . . school garages . . . indoor swimming pools . . . manual training shops . . . laundries . . . classrooms.

DRAVO HEATERS OFFER YOU—

- **Low initial cost . . . users report 50% to 60% savings.**
- **Concentration of heat at working level.**
- **Low Fuel consumption . . . burn gas or oil . . . easily converted.**
- **Automatic Control . . . on-off or modulating controls.**
- **Long service life, low maintenance . . . stainless steel combustion chamber.**
- **Mobility . . . easily moved to any location.**
- **Flexibility . . . where floor space is limited, can be wall-hung or suspended from trusses.**

Planning a school building? Why not look into the possibilities of Dravo "Counterflo" Heaters for your heating and ventilating needs? Write today for Catalog NO—52 -576

DRAVO CORPORATION

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Manufactured and sold in Canada by Marine Industries, Ltd., Sorel, Quebec
Export Associates: Lynch, Wilde & Co., Washington 9, D.C.

MEN AND JOBS

New Appointments

Highway departments

Wm. E. Strohm has succeeded Vandi Greyen as bridge engineer, in the New Mexico State Highway Department.

James P. Tuthill is district engineer of the Illinois highway division at Chicago.

Angelo F. Ghiglione, chief engineer of the Alaska Road Commission for the last 18 months, has been appointed Alaska road commissioner by the Department of the Interior. He replaces **Col. J. R. Noyes**, commissioner since 1948, who has returned to military service.

RESIDENT ENGINEER—Capt. John A. Myers of the Philadelphia District, Corps of Engineers, has been appointed resident engineer for the construction of the U. S. Army Signal Corps Depot at Tobyhanna, Pa. He is a graduate of the Massachusetts Institute of Technology. During World War II, he served five years in the Army in the U. S. and in the Southwest Pacific area.

John Duff, formerly commissioner of public works at Wenatchee, Wash., has been appointed associate Grant County road engineer, to head a new Quincy office in charge of Columbia Basin farm road construction. He previously was district engineer for the state highway department at Wenatchee, and Chelan County engineer. The new Wenatchee commissioner of public works is **George S. McLean**.

In the Washington state highway department, **Webb Hoover**, formerly office engineer, is now engineer of toll bridges and ferries. **Herbert C. Higgins**, formerly traffic engineer, becomes office engineer and secretary to the new state highway commission. **Rex Still**, assistant traffic engineer, was designated acting traffic engineer.

(Continued on page 52)

Your tools do 30%-40% more work with Jaeger "air plus" pressure

125 cfm of air runs 2 heavy concrete breakers at full efficiency — Will do as much work in 3 days as you can do in 4 days with any 105 cfm compressor.
250 cfm runs a 3½" wagon drill at full efficiency — Will average 35% more footage than you can drill with 210 cfm of air.

Nothing is more obsolete than 1932 model compressor ratings for operating today's air tools. Jaeger's 15% to 25% higher "new standards" provide the air you need to hold full pressure behind tools that otherwise would loaf under weak 70 lbs. pressure — or operate additional tools on work where top speed and striking power are not required. These ratings guarantee 75-125-185-250-365 and 600 cfm @ 100 psi — *at the lowest cost per cu. ft. at which you can buy air today.*

See your Jaeger distributor now — or send for Catalog JC-1

THE JAEGER MACHINE COMPANY

200 Dublin Ave., Columbus 16, Ohio

BITUMINOUS PAVERS • CONCRETE SPREADERS, FINISHERS • COMPRESSORS • PUMPS

IF YOU WALK ON IT

IT CALLS FOR
OPEN STEEL FLOORING

Ready for you-

THE NEW
IDEA-BOOK
"VERSATILE"
OPEN STEEL FLOORING

Write for your free copy today!

This 16-page book tells you and *shows* you all about Open Steel Flooring—the strong, durable, ventilated, versatile surface that provides industrial plants with safety-sure walkways, platforms, stairs, floors, catwalks, etc. Get a copy and read the Specifications that assure top quality Open Steel Flooring . . . the flooring tailor-made to fit your individual needs—that provides safe walking-working conditions in your plant.

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These Manufacturers assure top quality engineered grating.

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WALTER BATES COMPANY, INC.
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THE TRI-LOK COMPANY
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BLAW-KNOX COMPANY
Pittsburgh, Pa.
BORDEN METAL PRODUCTS CO.
Elizabeth, N. J.
HENDRICK MANUFACTURING CO.
Carbondale, Pa.

Men and Jobs . . .

AGGREGATE INSPECTION—G. D. Helmer, left, project manager for Lane Construction Co. on New York State's $7,805,798 grade crossing elimination project in Corning, N. Y., looks over some aggregate produced on the job. With him are M. C. Krautz, concrete superintendent, H. A. Saltmarsh, general superintendent, and C. O. Parsons, project engineer—ENR photo

State, City and County

The Texas State Board of Water Engineers has reappointed the following to new six-year terms as members of the Lower Neches Valley Authority: **J. C. Dishman**, Amelia; **N. A. Cravens, Silsbee**; and **John W. Newton**, Beaumont.

Frank B. Durkee, deputy director of the California Department of Public Works since 1948, has been appointed temporary successor of Director of Public Works C. H. Purcell, who resigned Aug. 1. (ENR Aug. 2, p. 28).

Charles Cleveland Jarrard, formerly connected with the U. S. Soil Conservation Service at Cleveland, Ga., has been named town manager of Hamilton Lakes, N. C., near Greensboro, succeeding **Roy Booth**, resigned.

Government agencies

The Department of Interior has announced two new appointments to the Quality of Water Branch of the Geological Surveys Water Resources Division. **Warren W. Hastings** of Arlington, Va., has been named assistant chief of the branch and **Walter F. White** of Fairlington, Va., has been designated chief of the Chemical Quality Section.

Bureau of Reclamation

D. M. Forester has been assigned as district engineer of the Yellowstone District, replacing **Carl L. Myers**, now on active duty with the 934th Army Engineering Aviation group. He is a 1914 graduate of Georgia Tech and has had extensive engineering experience at home and abroad.

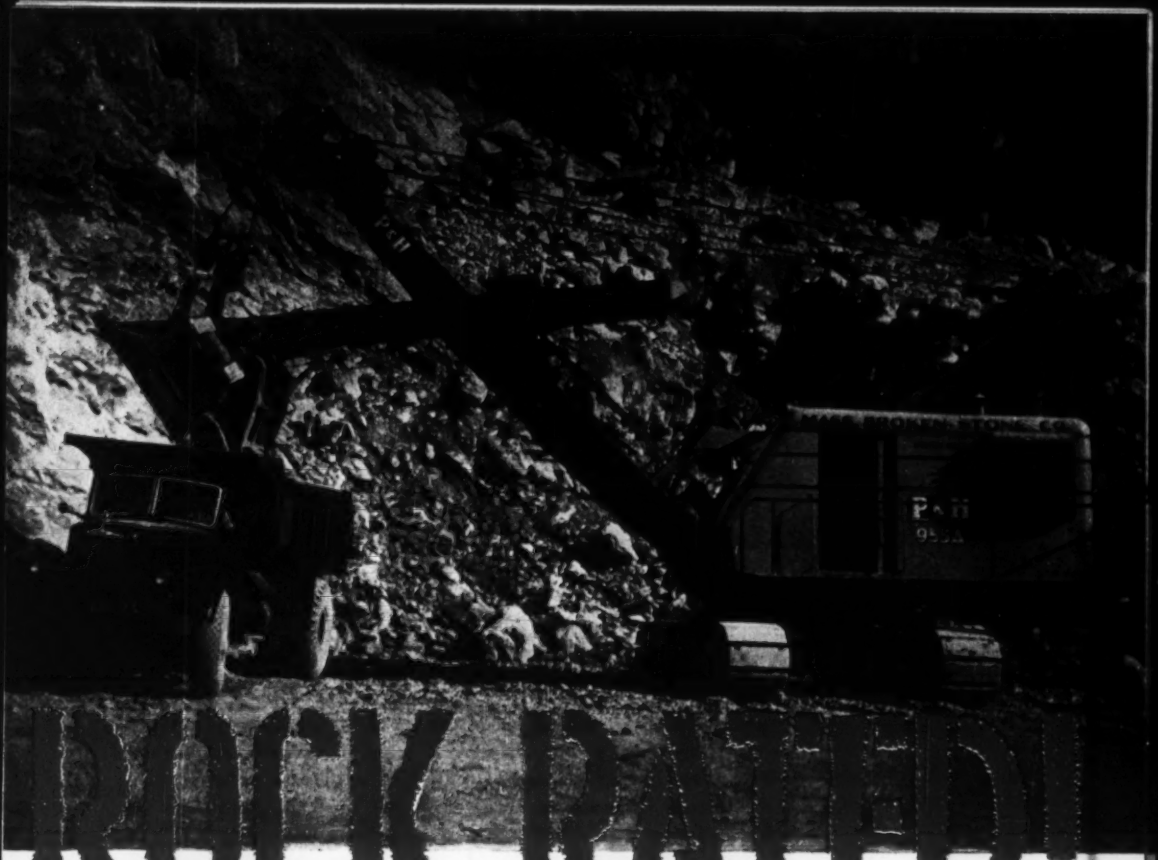
Lester W. Bartsh, 20 years with the bureau, has become an assistant regional director of Region 6 including North and South Dakota and parts of Montana and Wyoming.

Corps of Engineers

C. C. Haug, chief of the Sacramento, Calif., district, has been promoted to colonel.

(*Continued on page 55*)

TWENTY-FIVE YEARS—G. Frank Bayes, vice-president in charge of construction for the M. W. Kellogg Co., is congratulated by Bennett Archambault, executive vice-president of the firm, as he receives an engraved gold watch in honor of the completion of 25 years service with Kellogg. Mr. Bayes, one of 113 to be so honored, was attending Kellogg's 50th anniversary dinner held in New York.



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TO GIVE YOU MORE YEARS OF PROFIT

P&H MAGNETORQUE* ELECTRIC SWING SAVES YOU TIME, TROUBLE, MONEY!

Bring on your heaviest going! The 955-A is ready for it! It's the 2½ yd. companion of the famous P&H 1055 — with all its proved engineering — tough all-welded construction — greater stability — live roller circle — adjustable hook rollers — and many other advancements that assure years of hard service with minimum cost.

Operating advantages? More than you've ever known in a machine of its size. Magnetorque Swing does away with the old swing frictions — with all their headaches — forever. It's faster — 15% to 25% faster.

Ask us where you can see one in operation. Learn what "ROCK RATED" really means.

*T. M. of Harnischfeger Corporation for electro-magnetic type clutch.

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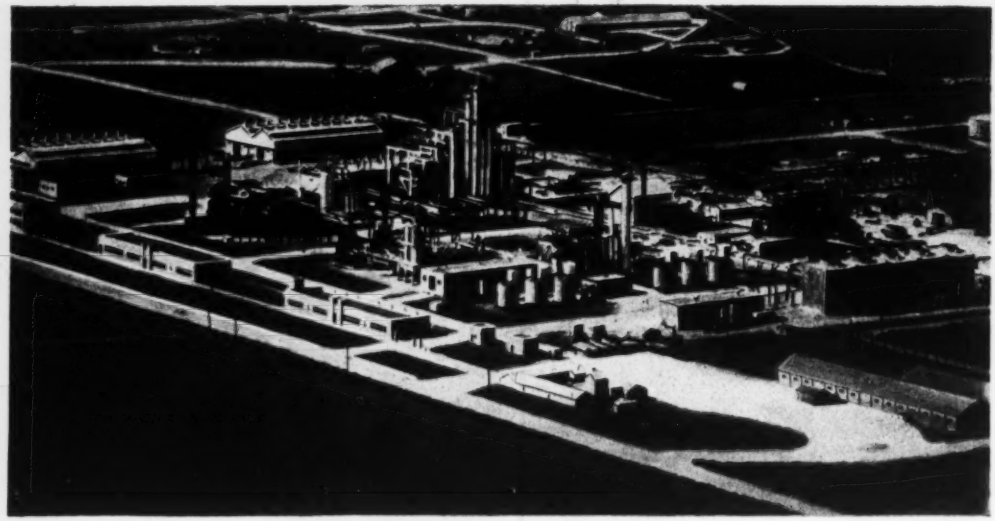
HARNISCHFEGER CORPORATION

EXCAVATORS • OVERHEAD CRANES • HOISTS • ARC WELDERS AND ELECTRODES • SOIL STABILIZERS • CRAWLER AND TRUCK CRANES • DIESEL ENGINES • CANE LOADERS • PRE-ASSEMBLED HOMES



Overall View showing new facilities . . . Ethylene Plant, Ethanol Plant and Isopropanol Plant

THE GIANT *of* GRANGEMOUTH

The British Petroleum Chemicals Ltd. plant at Grangemouth, Scotland, will supply the British Isles with a diversified line of important industrial chemicals and chemical intermediates derived from a crude petroleum stock. It was designed by Stone & Webster Engineering Corporation and built under the supervision of E. B. Badger & Sons Co. (Great Britain) Ltd.

STONE & WEBSTER ENGINEERING CORPORATION

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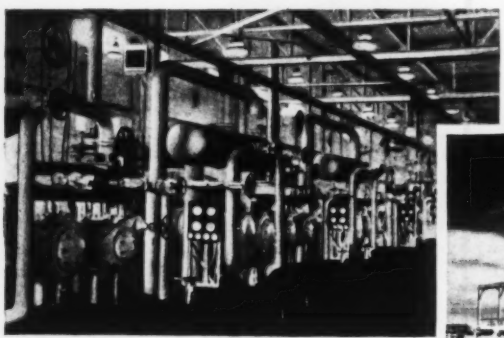
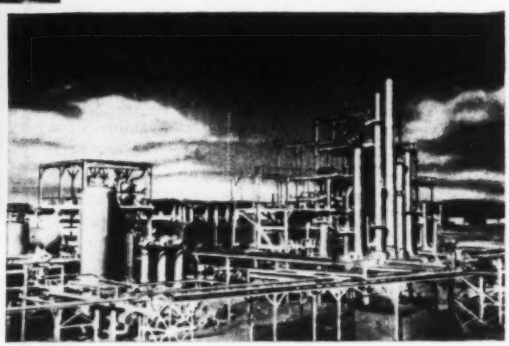


Compressor House – Interior

ETHYLENE PLANT
Cracking and Fractionating Structures



Men and Jobs . . .

Industrial and Commercial

George H. Pringle, of Pictou, N. S., assistant engineer of the Mead Corporation, Chillicothe, Ohio, since 1947, has been promoted to chief engineer. After attending Dalhousie University, Halifax, N. S., for 3 years, he was graduated in science from McGill University, Montreal.

Jack Smith, who resigned as city engineer at Ellensburg, Wash., has joined the Seattle, Wash., firm of Carey & Kramer, consulting civil and electrical engineers. **Keith Crim,** assistant city engineer, is acting engineer.

J. B. Thomas, Jr., and **V. L. Allen** of Charlotte, N. C., have formed a corporation, Thomas and Allen Co., Inc., which will engage in a general engineering and contracting business.

C. B. Cox, who retired from the Bureau of Reclamation Aug. 17 after 25 years of government service, has been named office engineer for construction of a new aluminum plant near Wenatchee, Wash., by Alcoa. A 1903 graduate of M.I.T., he was an assistant engineer on the Bureau of Reclamation's Yakima project from 1905 to 1910, held various positions in business and public service before returning to the Bureau in 1936 as an asst. engineer on Grand Coulee Dam.

Honors

The 1952 John Fritz Medal and Certificate for outstanding engineering achievements has been won by **Ervin George Bailey,** vice president of Babcock & Wilcox Co. This medal is the highest honor in the engineering field. By unwritten law, it is rotated among the four founder societies—the American Society of Civil Engineers, the American Institute of Mining and Metallurgical Engineers, the American Society of Mechanical Engineers, and the Institute of Electrical Engineers. Mr. Bailey has received almost 100 patents for improvements in efficiency and operation in full burning and steam generation.

Resignations

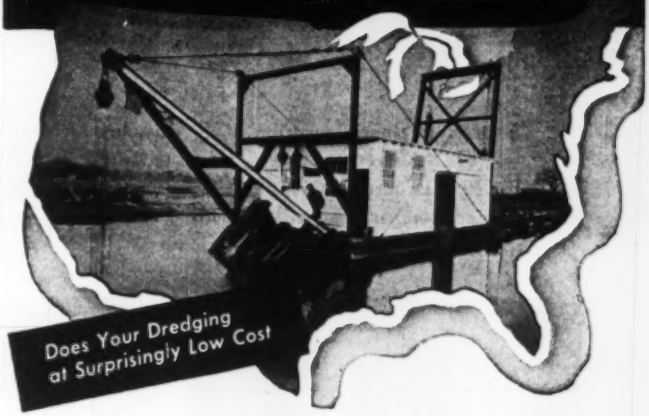
Angus G. Leitch has resigned as engineer for Tecumseh, Mich., to be city manager of Farmington, Mich.

Fred Stopher has resigned as city engineer of Hillsdale, Mich.

E. G. Cameron, chief engineer, Canada's National Harbours Board after serving 38 years.

Oscar A. Loyer, purchasing agent for the Ohio Highway Department, Columbus, has resigned because of ill health.

The Morris PORTABLE DREDGE
Is EASILY MOVED From Job to Job



Engineers recommend the Morris Portable Dredge because it can be dismantled quickly and moved from one job to another with minimum expense. Does its work rapidly on inland jobs often inaccessible to regular dredging equipment. Operates with only one man, requires only two or three men for manipulating the pipe line.

You Can Use the Morris Portable Dredge on Many Inland Jobs

It cleans water storage reservoirs . . . Deepens lakes and channels . . . Restores eroded beaches . . . Fills in undesirable lowlands . . . Beautifies parks and lakes. It does not disturb solids as much as other dredges . . . nor does it cause excessive turbidity. In fact, in most cases, reservoir water is usable even during the dredging operations.

Order a Morris Portable Dredge Now

We shall be glad to send one of our experienced hydraulic dredge engineers to discuss your dredging problems with you. He will recommend the purchase of a dredge only if its use is sound, practical and economical.

Should you require a dredge, we can design and build it now complete with either electric, gasoline or Diesel engine . . . and make installation of dredge and piping all ready for operation. Furthermore, we shall furnish an operator for an initial period of time until your own dredge operator learns operation and maintenance of the dredge.

Get Full Information About Portable Dredges

Write us today for Bulletin 177 which illustrates the Portable Dredge and a wide range of other dredges.

MORRIS MACHINE WORKS • Baldwinsville, N. Y.

Sales Offices in Principal Cities

MORRIS *Centrifugal Pumps*

Missouri Highway Job Proves

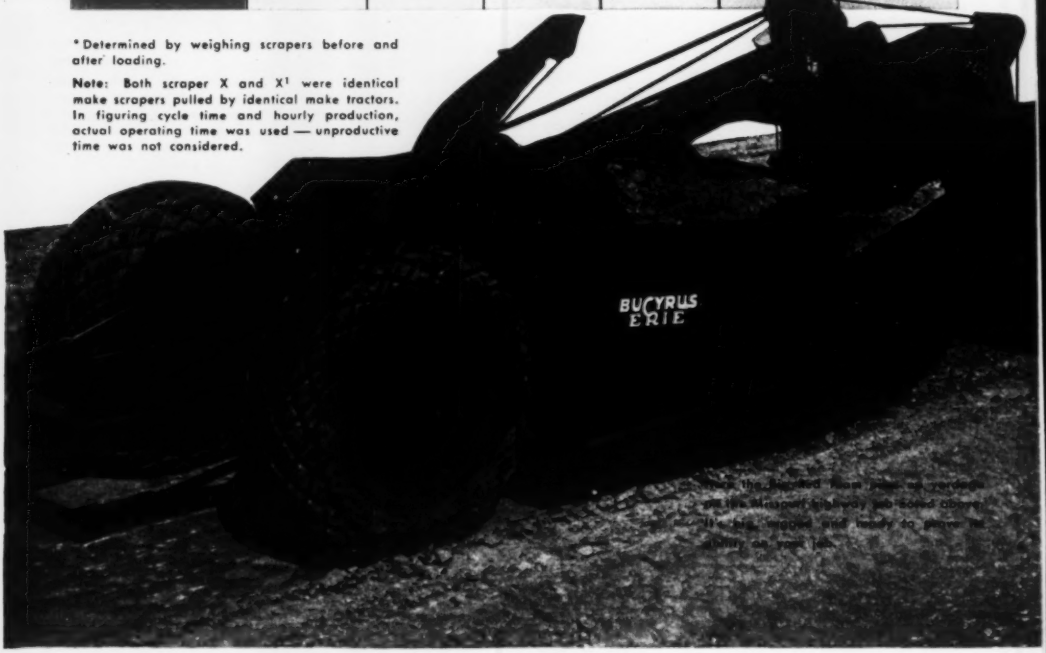
BIG RED TEAM

LOOK at these figures on a big Missouri highway job with a haul distance of 2350 feet one way. Just as on similar jobs throughout the country, the Big Red Team of Bucyrus-Erie Scraper and International TD-24 Tractor outperformed comparable size competitive units on every count — yardage, loading speed, dumping speed, overall cycle time.

Equipment	Struck Capacity (cu. yd.)	Average Load* (cu. yd.)	Average Loading Time	Average Dumping Time	Average Cycle Time	Cu. Yd. per hr.
Big Red Team Of B-250 Scraper And TD-24 Tractor	22	19.9	75 sec.	33 sec.	12 min. 46 sec.	87
Tractor-Scraper Combination X	18.7	13.9	77 sec.	65 sec.	16 min. 30 sec.	51
Tractor-Scraper Combination X^1	18.7	13.9	80 sec.	70 sec.	15 min. 11 sec.	55

*Determined by weighing scrapers before and after loading.

Note: Both scraper X and X^1 were identical make scrapers pulled by identical make tractors. In figuring cycle time and hourly production, actual operating time was used — unproductive time was not considered.



WINS ON EVERY COUNT

Here's What Those Facts Really Show!

1 The B-250 with 3.3 yd. greater capacity than either competitive scraper averaged 6 yd. larger loads — carried 32 and 36 more yards per hour respectively than the competitive units.

2 The B-250, even with a payload 6 yd. greater, loaded faster and dumped in half the time of the competitive units.

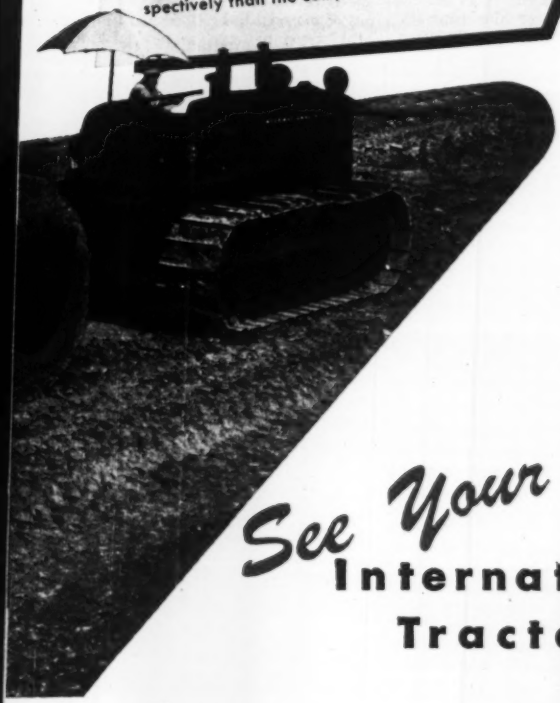
3 The B-250 covering the same 2350-ft. one way haul distance as the two competitive outfits, completed the load-travel-dump-return cycle in an average of 23% and 16% less time respectively than the competitive units.

Dumps Faster

Loads Faster

Loads Bigger

Hauls Faster



Facts speak for themselves — and this is no isolated example. We have a variety of such case histories on record. Verify them by asking your International Industrial Tractor Distributor for a demonstration on your own job. Watch the Big Red Team outperform other crawler-scraper combinations — outperform rubber-tired outfits on much longer hauls than has been generally accepted.

248TSIC

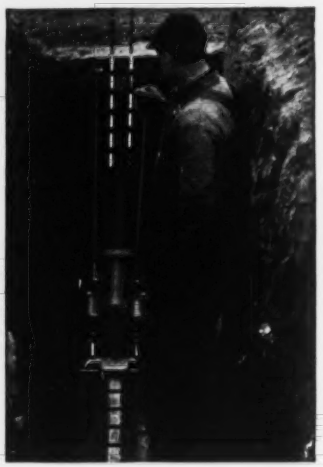
BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

See Your
International Industrial Tractor Distributor

PUSH PIPE

UNDER STREETS, WALKS,

TRACKS, FLOORS



...with a GREENLEE PIPE PUSHER

Yes, here's the quick and simple way to install underground pipe. With a GREENLEE Hydraulic Pipe Pusher *one man* pushes pipe *under* obstacles. No tearing up of pavement, lawns, floors... eliminates extensive ditching as just a short trench accommodates the Pusher. No tedious tunneling, back-filling, tamping, or re-paving. Job time is cut to a fraction. Pusher often pays for itself through labor savings on the first job or two.

No. 790 GREENLEE PUSHER For 3/4 to 4-inch pipe. Six Speeds—6,500 to 40,000 lbs. pushing pressure.

No. 795 GREENLEE PUSHER For pipe larger than 4-inch, concrete sewer pipe, large drainage ducts. Six speeds—25,000 to 150,000 lbs. pushing pressure.

POWER PUMP for both sizes of GREENLEE Pushers. Pushes pipe at rate of two feet per minute.

GREENLEE

Get facts on timesaving Greenlee tools now. Write Greenlee Tool Co., Division of Greenlee Bros. & Co., 2229 Columbia Avenue, Rockford, Illinois, U. S. A.

Notes on legal decisions

Summaries of decisions relating to construction work prepared by I. Vernon Werbin, counselor at law and engineer, New York, author of Legal Phases of Construction Contracts (McGraw-Hill Book Co.)

Modification of a contract

In states where statutes do not specifically state that written contracts can only be modified in writing, a written contract can be modified orally even though the contract itself provides that changes must be made in writing.

There can be no express modification of a contract involving a change in the cost of the work unless the parties agree on a price to be paid for the work pursuant to the claimed modification of the contract. Price is an indispensable element of an express contract and without an agreement as to the price to be paid, there can be no express contract.[1]

In this case a subcontractor brought an action against the general contractor to recover for part of the work done on the theory that there was an express contract covering changes made in this part of the work. The court found that while the changes in question increased the cost of the work, the subcontractor could not recover on the theory of an express modification of the contract, since there was no agreement between the parties as to the price to be paid for the work as modified. The court pointed out that under the circumstances of the case, the sole remedy available to the subcontractor was to sue to recover on the basis of the fair and reasonable value of the work.

It should be noted, however, that in some states like New York, statutes exist which provide, in substance, that a written contract or other written instrument cannot be changed orally when it contains a provision stating that changes can only be made in writing. Such contracts can only be changed by a written instrument signed by the party against whom enforcement of the change, modification or discharge is sought.[2]

(1) Allegheny County Housing Authority etc. v Carlsto Const. Co., 90 F. Supp. 1007, (U. S. District Court of Pennsylvania, June 19, 1950.)

(2) Section 33-c of N. Y. Personal Property Law.

Damages due to delays

A contractor sued the U. S. government for damages due to delays by its agents under a contract for the manufacture of concrete practice bombs. Tail assemblies, to be delivered by the government, were to be cast integrally with the concrete bombs, but the contract failed to specify when they were to be delivered. It did, however, require the contractor to deliver the bombs, complete with tail assemblies, within 45 days after the contract was signed.

Due to delays in delivery of the tail assemblies, the contractor did not make the last delivery until four months after the date set forth in the contract, at which time he was paid in full.

Subsequently, the contractor brought action against the government[1] to recover damages sustained as a result of its delay in delivering the tail assemblies, which made it impossible for him to complete the bombs within the contract time.

The court held that the delays caused by the government constituted a breach of the contract, and that the contractor was entitled to recover the damages sustained. The court referred to a case[2] in the U. S. Supreme Court to sustain its conclusion.

The court in its opinion stated: "Logic would seem to require that a contract binding one party to fabricate goods for another by a certain time out of material to be furnished by the other must perforce be held also to bind the other party to supply the material sufficiently early for the work to be done as promised and not to be dilatory in accepting the completed goods. *** The promisor's undertaking normally gives rise to an implied complimentary obligation on the part of the promisee; he must not only not hinder his promisor's performance, he must do whatever is necessary to enable him to perform.[3] The implied obligation is as binding as if it were spelled out.[4]

"Neither the defendant's (government's) obligation, nor its liability for its breach is diminished by the fact that the contract provided for an extension of time for performance in the event of government imposed delays. Although such a provision, which is nearly always found in government contracts, is intended primarily for the benefit of the contractor, it is not without a bearing on what the contract binds the government to do."[5]

(1) Kehm Corp. v United States, 93 F. Supp. 620, (United States Court of Claims, Nov. 7, 1950.)

(2) United States v Wyckoff Pipe & Creosoting Co., 271 U. S. 263, 46 S. Ct. 503, 70 L.Ed. 938.

(3) United States v Speed, 75 U. S. 77, 19 L.Ed. 449 and other cases.

(4) Wood v Lucy, Lady-Duff-Gordon, 222 N. Y. 88, 118 N. E. 214.

(5) H. E. Crook Co. v United States, 270 U. S. 4, 70 L.Ed. 438.

WALLS FOR A WIDE RANGE OF SPECIFICATIONS ...AND ALL QUICK!

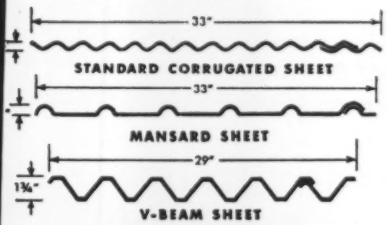
This is

GALBESTOS METAL

A steel sheet to which asbestos felt is metallically bonded. Then the felt is impregnated with asphalt and waterproofed. Tested and approved by Underwriters' Laboratories, Inc., Chicago, and by Associated Factory Mutual Fire Ins. Co., of Boston. Galbestos metal comes in maroon, black or aluminum color and is fabricated in various shapes. It has been architecturally well designed into thousands of installations all over the world.

• Galbestos metal for defense plant construction provides a wall resistant to fire, corrosion and blast. It can be well designed, worthy of permanent structures. It is maintenance-free. And, whether you want a mere skin, with or without insulation or panels, the Robertson method enables you to build faster with Galbestos metal than with any other material.

Available in these forms:

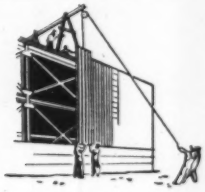


THE TOP-SPEED FASTENING METHOD

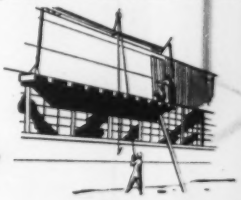
permits all fastening work from the outside, eliminates interior scaffolding. This new method permits erection crews to place twice as much material in the same time, with safety. Top-Speed Insulation is a Robertson method for applying insulation from the outside, before the Galbestos is fastened over it. This method also halves the time. It makes a good-looking job inside. Needs no painting.

WRITE FOR COMPLETE LINE OF CATALOGS

1. GALBESTOS
2. TOP SPEED FASTENING
3. Q-PANELS (STANDARD)
4. Q-PANELS (G-TYPE)



◀ Q-PANEL (STANDARD) OR Q-PANEL ▶ (G-TYPE)



Q-Panels are the famous Robertson factory-fabricated, insulated curtain wall. They are available in a variety of fluted metal surfaces. Available 2' wide, in lengths up to 25', lightweight, only 3¼" thick, but superior in insulation value to a 12" masonry wall with furred plaster. A small crew can erect a Q-Panel—50 sq. feet—in 9 minutes.

G-type Q-Panels are the field-assembled insulated curtain wall: a flat interior steel sheet with insulation, and a formed Galbestos metal exterior in one of the shapes shown above. This is recommended for attractive, economical industrial jobs where insulation is required.

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And on location, erecting crews take over with special timesaving techniques that get the structure up in a hurry and completed on schedule.

If you have plans and specifications on a building or a bridge, send them to us to be estimated. Even if you are only considering such projects and they are in the "talking stage," consult our technical experts. They can help you.

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MUNICIPAL

THE OPEN SEA--Looking out on the boundless Pacific are the eleven tall new buildings of the San Francisco housing project of the Metropolitan Life Insurance Co. known as "Parkmerced." The 200-acre development is on the site of a former public golf course. Casement windows 14 ft high in the 13-story apartment buildings afford tenants a fine view of Lake Merced and the ocean beyond.—Wide World photo

Montreal's subway plans are making progress

A subway for Montreal (ENR April 12, page 54), moved one more step towards realization with the announcement that the consulting services of Charles E. DeLeuw, of DeLeuw Cather and Co., engineers, of Chicago, had been obtained by the Montreal Transport Commission.

The commission is a publicly-owned body which took over the operation of the Montreal surface transportation system from the Montreal Tramways Co., a few weeks ago. Mr. DeLeuw is acting as consulting engineer to the Toronto subway, the first part of which is now well on the way towards completion.

It was thought that the Montreal subway will be designed in the same way as the Toronto project, a local engineering office staffed by Canadians working under the commission, with special supervision by the DeLeuw firm who will have a few key men in Montreal. All previous plans will first be reviewed in this new study and then final plans will be prepared after the location of the subway has been finally fixed.

Arthur Duperron, president of the commission, says that it is expected that final plans will be completed within a year and a half, and within a year if possible. Final approval of the project must be given by the provincial government of Quebec before work can actually start. The transport commission will establish a special engineering and drafting section for the project in addition to using as much of its regular engineering staff as possible.

Traffic conditions have been unsatisfactory in Montreal for some time, the unusual lay-out of the city around Mount Royal adding much to the congestion. The intense development of the central part of the city, fairly steep grades on some important city arteries, and difficult subsurface conditions will make the design and construction of the Montreal subway an outstanding project in civil engineering.

Highway Research Board to study parking problem

A survey of parking is to be made by the Highway Research Board of the National Academy of Science.

Answers are to be sought for such questions as these:

What is the effect of the lack of offstreet parking facilities on downtown property values and taxes; on volume of trade; on street congestion; and on the full use of the family car?

It also will seek to determine whether sufficient offstreet parking at moderate cost can be provided, and how such facilities can best be financed.

(Continued on page 62)

Superb CASTELL Prints

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CASTELL LOCKTITE REFILL HOLDER 9400

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We agree with him 100%. Imported CASTELL Lead *always* has produced more sharp copies per original drawing than any other pencil on the market. New price ranges now bring CASTELL with imported lead within reach of craftsmen who heretofore used ordinary drawing pencils. You, too, may now enjoy the use of the world's finest drawing pencil at no extra cost. See your Dealer today.

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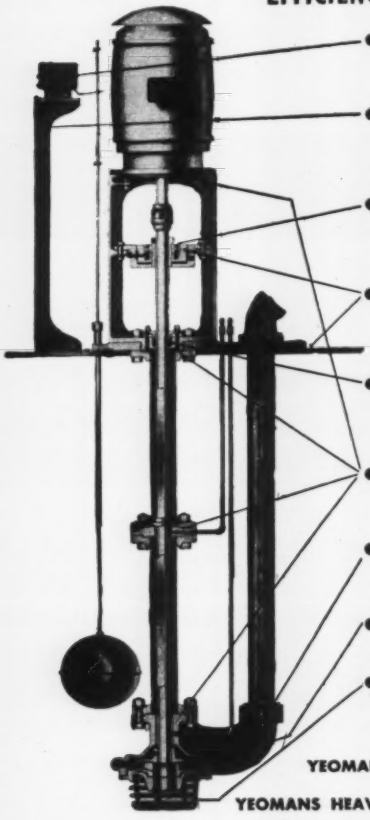

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  —float control above splash level; float travel adjustment above floor plate for greatest accessibility
- **ADJUSTABLE BALL THRUST BEARING**
  —makes for easy adjustment of impeller clearance and for easy assembly and adjustment after repairs
- **THRUST BEARING ABOVE FLOOR PLATE**
  —prevents submergence of bearing; eliminates possibility of moisture entering bearing through suspension pipe
- **STUFFING BOX AT FLOOR PLATE**
  —prevents escape of gases, moisture or vapors from suspension pipe; most effective type of construction.
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  —essential to proper alignment of rotating parts
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  —prevents strain in pump assembly, much more efficient than rigid joints
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- **CAST IRON STRAINER (ON BILGE PUMPS)**
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Municipal . . .

The U. S. Bureau of Public Roads is lending a staff engineer to correlate the research at selected universities.

In announcing the new project, the Highway Research Board pointed out that while various organizations in the past have conducted studies of off-street parking as a remedy for street congestion, techniques for measuring requirements for these facilities, garage and lot design and zoning, and financing problems, no comprehensive research has ever been undertaken on the basic economic factors involved. The proposed survey is expected to fill this long-felt need.

New Boston harbor bridge to pay for itself soon

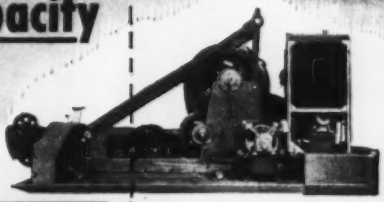
The $2,600,000 Long Island viaduct, linking the Long Island Hospital with Moon Island and the mainland, Boston Harbor, has been opened.

John R. McGillivray, city institutions commissioner, estimates that the new 3,450-ft bridge will have paid for itself within 10 years through savings effected by the cancellation of the Long Island boat service. He also said that the city will save additional money when the construction of the proposed $2,000,000 Long Island Hospital additions get started because materials can be trucked over the viaduct.

Construction of the bridge was started last September and brings about the biggest change in the physical appearance of the harbor since Governor's Island and Apple Island in East Boston were engineered into the Logan International Airport. The bridge has 12 main trusses 250 ft in length. The overall weight is 3,553 tons and it has a clearance of 50 ft at high tide. Some of the trusses were prefabricated on barges at another point in the harbor and were lowered into position by the ebbing tide.

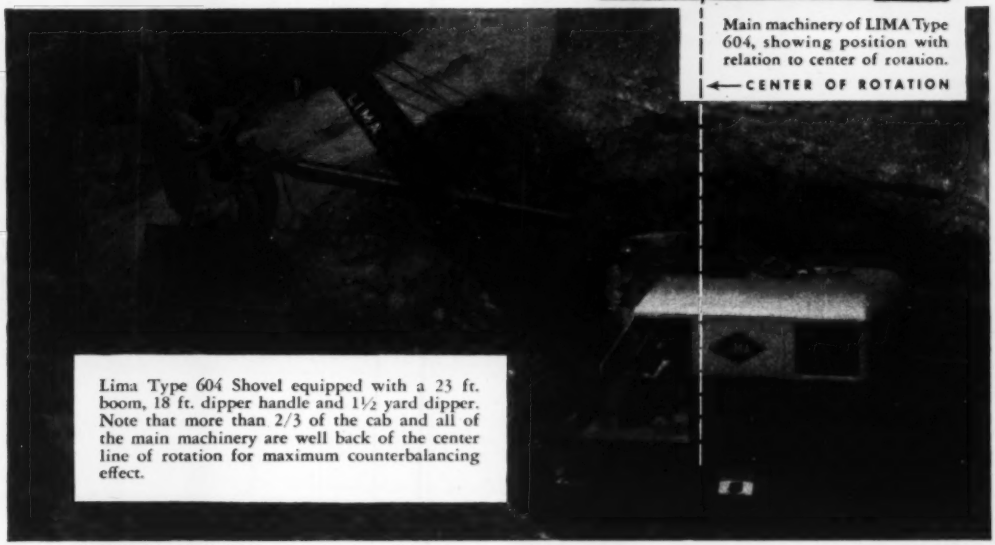
• **Illinois wheel tax**—Hard-up Illinois cities, having exhausted other sources of income, are turning to the wheel tax. About one in every five Illinois cities and villages now imposes the levy upon motorists and truckers for use of the streets and alleys. Illinois law restricts annual downstate wheel taxes to $5 on light cars and $10 on those over 35 hp. The 1951 general assembly approved a 50 percent increase in the Chicago maximums to $15 and $30, respectively. Wheel tax collections are meant, by state law, for street and alley improvement, but cities may apply up to 15 percent for salaries of traffic policemen. A bill now pending would give Chicago the right to apportion up to 35 percent of wheel taxes for police salaries.

Why the LIMA Type 604 develops the greatest capacity per lb. of weight



Main machinery of LIMA Type 604, showing position with relation to center of rotation.

←CENTER OF ROTATION



Lima Type 604 Shovel equipped with a 23 ft. boom, 18 ft. dipper handle and 1½ yard dipper. Note that more than 2/3 of the cab and all of the main machinery are well back of the center line of rotation for maximum counterbalancing effect.

● The LIMA Type 604 shovel, crane and dragline is engineered to produce greatest capacity with minimum weight. This is achieved by placing as much weight as possible *behind* the center of rotation—eliminating the need for excessive counterweight. Hook rollers on which the machinery base revolves eliminate strain from the center pintle—permitting continuous, safe operation at full capacity.

The simple, compact design of the main machinery, using the fewest number of shafts to accomplish the various operations, further contributes to efficient, trouble-free service.

These are only a few of the features which make the LIMA 604 a favorite with owners and operators. The Lima Line includes shovels ¾ to 6 yards, Cranes 13 to 110 tons and Draglines variable.

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ENGINE EFFICIENCY calls for engine *cleanliness*... and Delvac Oils help keep heavy-duty gasoline and Diesel engines *clean*—promote full power—minimize wear—even under the toughest operating conditions!

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This means fewer repairs and overhauls—*lower operating and maintenance costs all around!*

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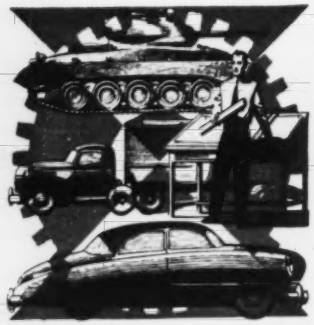

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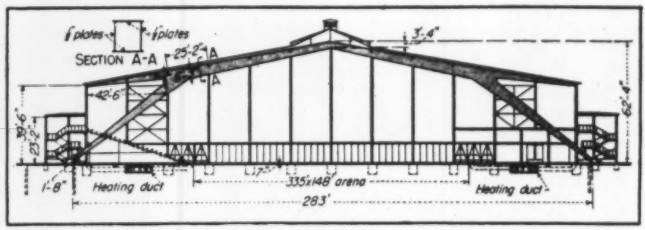

WELDED BOX ARCH is a novel structural feature of Europahall at the Hannover fair grounds. Section AA shows how the box is built up.

Germans use hangar-type construction

The highlight of German developments in hangar-type construction is Europa Hall at the Hannover Fair grounds, where Germany's first post-war international building and construction exhibition is being held.

Claimed to be the largest structure of its kind in Europe, it has an unobstructed floor space of 140,000 sf. The hall is 525 ft long and 263 ft wide. Eaves are 39 ft 6 in. high and the roof 62 ft high.

Seven hollow steel arches, with span of 283 ft provide the roof support. Installed at 65-ft 6-in intervals, they are of welded box construction with ½-in. thick steel plates.

Reinforced concrete footings of the arches lie outside the walls in staircase wings. Splices are bolted. Expansion and contraction is stabilized at the apex of the arches, with a play of 2½ in.

Steel rafters rest on longitudinal beams which pass through the arch support members. Wooden rafters for carrying roof boarding rest on the steel rafters.

Glass walls with steel paneling rest on a 1-ft high brick work. Also glassed-in are the staircase wings. The staircases, with double passageways, lead to balconies of 16½-ft height. There are 13 of the glassed-in staircases. In place of the 14th is a one-story brick wing off the left rear of the building.

The rear of the hall has a 65½ ft wide gallery which is used as a restaurant. The front of the hall can be opened completely by means of folding doors, enabling heavy capital goods to be off-loaded into the hall directly from a rail siding at the entrance. A railing along the entrance platform can be folded down to permit cargo handling. The folding doors in turn have smaller entrances for personnel. There also are entrances in each of the wings.

Flooring consists of a 6-in. concrete base with a 1 in. cement mortar finish. A center arena 335 x 148 ft has wood flooring to accommodate sports.

EXTERIOR of Europa Hall.

Aside from glassed-in walls, there is a 39½-ft wide skylight to enhance daylighting of the hall. A special lighting system, with suspended downlight lamps, sheds 2,000 candlepower without glare.

Special attention was given to the color arrangement in an effort to underscore the structural beauty of the hall. Rafter construction is in pale yellow; ceiling and lower parts of the walls are in white; the trellis work of the lighting system in light gray and lamps and railings in bright red.

The current 10-nation building and construction exhibition opened July 3 and will continue most of the summer. The United States is a participant in the Hannover event, which includes a congress for exchange of ideas among architects, builders, engineers, city planning experts, etc.

The hall was designed and built by Brockmann and Lichtenhahn. Louis Eilers fabricated the steel.

Tar was not to blame for paving trouble

In our issue of April 26 last we published an item about imperfections in the new Brazilian highway, the Rodovia Presidente Dutra, connecting

(*Continued on page 69*)

8

sound reasons why there is no substitute for STRUCTURAL STEEL

The structural steel experience and facilities of this 55-year old organization are available to you any time, anywhere.

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The world's most widely used material has the ability to withstand enormous pressures and stresses.

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Foreign . . .

Rio de Janeiro and Sao Paulo. Additional information clears of blame the tar supplied by the Brazilian National Steelworks at Volta Redonda.

Breaks were caused by combinations of factors, varying from spot to spot, which included soil subsidence, excessive weathering, methods of application and travel density. At places where all these had been properly handled there has been no failure.

In addition, after correction of the conditions at points of failure, Volta Redonda tar has been used on the new surface with excellent results.

Foreign briefs

• **Independent of Marshall Plan**–Sweden and Portugal have joined the ranks of Western European countries which are now independent of Marshall Plan dollar aid. Previously grant economic assistance to the United Kingdom and Ireland had been suspended. Self-help, combined with American dollars and technical assistance are what have put Sweden and Portugal in an improved economic position so that they can support themselves at home and in world trade without outside dollar assistance.

• **New Mexican seaport**–Plans have been approved for Mexican government construction of Puerto Ulloa on Almejas Bay, southern district of Baja California territory. The reported cost of the new port is $1,500,000.

• **For Spanish hydro power**–New credits totaling $5,600,000 have been granted to Spain on the authorization in Title I, Chapter XI of the General Appropriation Act of 1951. The first of the credits in the amount of $2,400,000 is to finance equipment and services to aid in the development of additional hydroelectric power in the Madrid area. The credit is to Union Electrica Madrilena S. A. The last year in which Spain was able to meet its requirements for electric power was 1943. Since that time it has been necessary to limit the use of power in varying degrees, with some sections receiving only enough to operate plants a few hours a week. This credit will be a substantial help to industrial power users around Madrid.

• **Aid FROM Germany**–The German people made a gift of 18 gasoline-driven pumps to the people of Kansas for flood rehabilitation projects. Gov. E. N. Arn said that the pumps, flown from Germany by the Military Air Transport Service, were put into immediate use in rural areas of the state.

(*Continued on page 70*)

Sash Replacement with PC Glass Blocks-

▸ **increases production**
▸ **reduces operating costs**

PC GLASS BLOCKS give more than twice the insulating value of ordinary single-glazed windows. They thus help to reduce heating and air-conditioning costs. They seldom require repairs or replacements. No periodic painting, puttying and caulking are necessary. They admit abundant daylighting over wide working areas, stop the infiltration of harmful dust and grit. And PC Glass Blocks do not utilize critical defense materials, so they are immediately available. For further information on PC Glass Blocks, fill in and return the convenient coupon.

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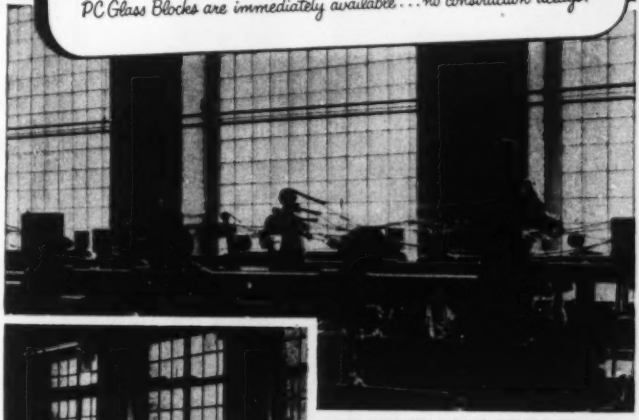

THESE photographs of the Berkshire Spinning Associates, Inc., Adams, Mass., show how old sash was replaced with PC Glass Blocks. Sash replacement programs can be completed at one time, or they may be spread over a required period, thus adapting them to budget demands.

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Distributed by Pittsburgh Plate Glass Company; W. P. Fuller & Co. on the Pacific Coast; Hobbs Glass Ltd. in Canada; and by leading distributors of building materials everywhere.

The list of roads, airports and bridges constructed with the help of FLEX-PLANE equipment reads like a report of the nation's top construction projects. And why not — FLEX-PLANE equipment is

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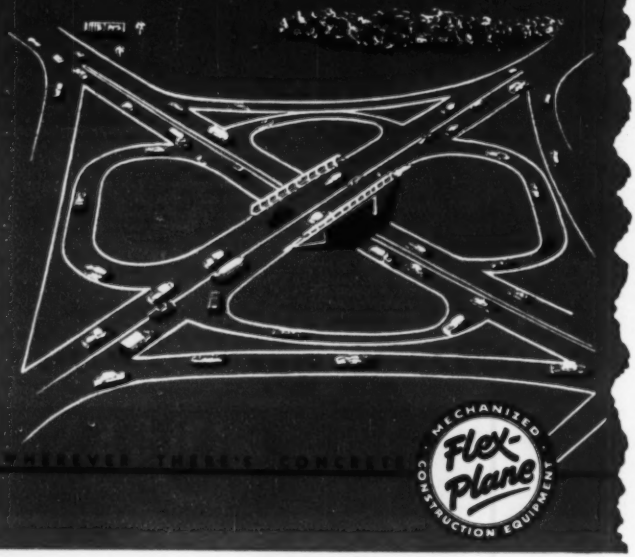
engineered to modern times. Highways, bridges and airports are larger, stronger and must be constructed faster than ever before. FLEX-PLANE has always been a leader in designing and building automatic machinery that enabled construction people to build better at greater speeds.

It was FLEX-PLANE who developed the dummy joint and built the world's largest finishing machine. It was FLEX-PLANE who pioneered automatic curing and automatic dowel bar installing, and built the machines to do the job. And it is FLEX-PLANE today with the most up-to-the-minute equipment for all kinds of heavy concrete work. Be sure you have the latest. Write ***The Flexible Road Joint Machine Co., Warren, Ohio,*** for the last word in modern cost-reducing concrete equipment.



Foreign . . .

BIRMINGHAM WATER SUPPLY— This is the new Claerwen Dam, nearly completed, which will assure an adequate water supply for Birmingham, England. The dam, 182 ft high and 1,066 ft long, was built with the aid of Italian stone masons. The water comes from the mountains of Wales 70 miles to the west. Already more than 700,000,000 gal have been impounded. The total capacity will be 10,860,000,000 gal.—Eastern Pub. photo.

World Bank membership consists of 49 nations

The governments of 49 nations are now members of the International Bank for Reconstruction and Development created by the United Nations organization. Each of these governments has contributed to the bank's capital by subscribing to shares of the bank's capital stock.

The total authorized capital stock is ten billion dollars and total subscribed capital as of March 31 last amounted to $8,338,500,000.

The subscription of each member government is divided into two parts. Twenty per cent is paid into the bank and 80 per cent is subject to call by the bank only when required to meet obligations created by borrowing or guaranteeing loans. Of the 20 per cent paid up subscriptions, two per cent is payable in gold or United States dollars and is generally freely usable by the bank in any of its operations; the remaining 18 per cent is payable in the currency of the member and may be lent to other members only with the member's consent.

The bank has expanded its activities greatly in recent years and has made loans in most parts of the world. By the end of March, 1951, the bank had granted 44 loans to an amount of $1,089,875,000 to finance programs or projects in 20 of its member countries.

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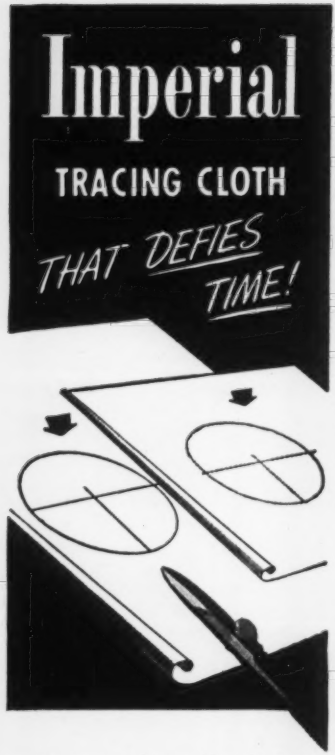

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MEETINGS

T. E. Robertson of Spartanburg, has been elected president of the South Carolina Water and Sewage Works Association. Albert J. Lucas of Walterboro was named vice-president. W. T. Linton of Columbia, director of the State Water Pollution Control Authority, was re-elected secretary-treasurer.

The Maine State Highway Commission recently called in its supervisory field employees for an all-day instruction meeting at Augusta. Attending were 7 highway division engineers, superintendents of maintenance, field assistants to division engineers and district supervisors.
Gov. Frederick Payne spoke.

The summer convention of Professional Engineers of North Carolina was held at Atlantic Beach, N. C., August 2-4, with President Robert B. Rice of Raleigh presiding. Speakers included: L. L. Dresser of Tulsa, Okla., national president of Professional Engineers; Commander W. F. E. Cabiniss, assistant public works officer for the Sixth Naval District, Charleston, S. C.; Col. Roland C. Brown, district engineer of the Wilmington, N. C., District of the Corps of Engineers; J. K. Knoerle, of Carr and J. E. Greiner of Durham, N. C., and Baltimore, Md.; Col. Howard W. Marsden of the Maritime Commission, Washington, D. C.; and Harry Robert of Robert and Co., Atlanta, Ga.

James R. Goetz was elected president of the new Birmingham, Ala. chapter of the National Society of Professional Engineers. Other officers: R. E. Strickland, Jr., 1st vice-president; W. N. Armentrout, 2nd vice-president; J. L. Harrington, secretary; and W. R. Lacefield, treasurer.

C. A. Elliott is president of the engineering section of the Iowa Association of County Officers. Other officers: J. C. Mors, vice-president; and F. W. Akers, secretary.

CALENDAR

N. J. Society of Professional Engineers, Ocean County Park, Lakewood, N. J., Sept. 8.

New England Water Works Association, Hotel Statler, Boston, Mass., Sept. 10-12.

Minnesota section, American Water Works Association, fall meeting, Hotel Nocollet, Minneapolis, Sept. 12-14.

N. Y. section American Water Works Association, fall meeting, Whiteface Inn, Lake Placid, N. Y., Sept. 13-14.

Public Works Congress and Equipment Show, Memorial Bldg., Detroit, Mich. Sept. 16-19.

Pennsylvania section, American Water Works Association, Bellevue-Stratford Hotel, Philadelphia, Pa., Sept. 19-21.

S. D. Water and Sewage Works Conference, Chas. Gurney Hotel, Yankton, Sept. 19-21.

Kentucky-Tennessee section, American Water Works Association, fall meeting, Louisville Kentucky Hotel, Louisville, Ky., Sept. 17-19.

Michigan section, American Water Works Association, fall meeting, Whitcomb Hotel, St. Joseph, Sept. 19-21.

Rocky Mountain section, American Water Works Association, fall meeting, Hotel Cosmopolitan, Denver, Colo., Sept. 24-25.

9th International Road Congress, Permanent International Association of Road Congresses, Lisbon, Portugal, Sept. 24-29.

Wisconsin section, American Water Works Association, fall meeting, Pfister Hotel, Milwaukee, Sept. 25-27.

Ohio section, American Water Works Association, fall meeting, Commodore Perry Hotel, Toledo, Ohio, Sept. 27-28.

Missouri section, American Water Works Association, Hotel Robidoux, St. Joseph, Mo., Sept. 30-Oct. 2.

West Va. section AWWA, Daniel Boone Hotel, Charleston, W. Va., Oct. 4-5.

First Pan American convention, International Road Federation, Municipal Palace, Lima, Peru, Oct. 5-6.

Federation of Sewage & Industrial Waste Association, Municipal Auditorium, St. Paul, Minn., Oct. 8-11.

Concrete Reinforcing Steel Institute, semi-annual meeting, Grove Park Inn, Asheville, N. C., Oct. 8-13.

Structural Engineers Association of California, The Ahwahnee, Yosemite National Park, Calif., Oct. 11-13.

Street Maintenance and Sanitation Officials, Ohio, Hotel Pick-Ohio, Youngstown, O., Oct. 18-19.

Engineers Council for Professional Development, Statler Hotel, Boston, Mass., Oct. 19-20.

National Council of State Boards of Engineering Examiners, Statler Hotel, Boston, Mass., Oct. 21-24.

American Society of Civil Engineers, annual meeting, Statler Hotel, New York City, Oct. 22-25.

American Association of State Highway Officials, Fontinelle Hotel, Omaha, Neb., Oct. 23-26.

National Standardization Conference, Waldorf-Astoria Hotel, N. Y. City, Oct. 22-24.

American Institute of Steel Construction, Inc., annual meeting, The Greenbrier, White Sulphur Springs, West Va., Oct. 22-25.

California section, American Water Works Association, Fairmount Hotel, San Francisco, Oct. 23-26.

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WHAT'S the assignment? How much tonnage? What percentage of crushing? How much weight are you allowed to move on your highways?

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18V	1024	24x16	40	36700
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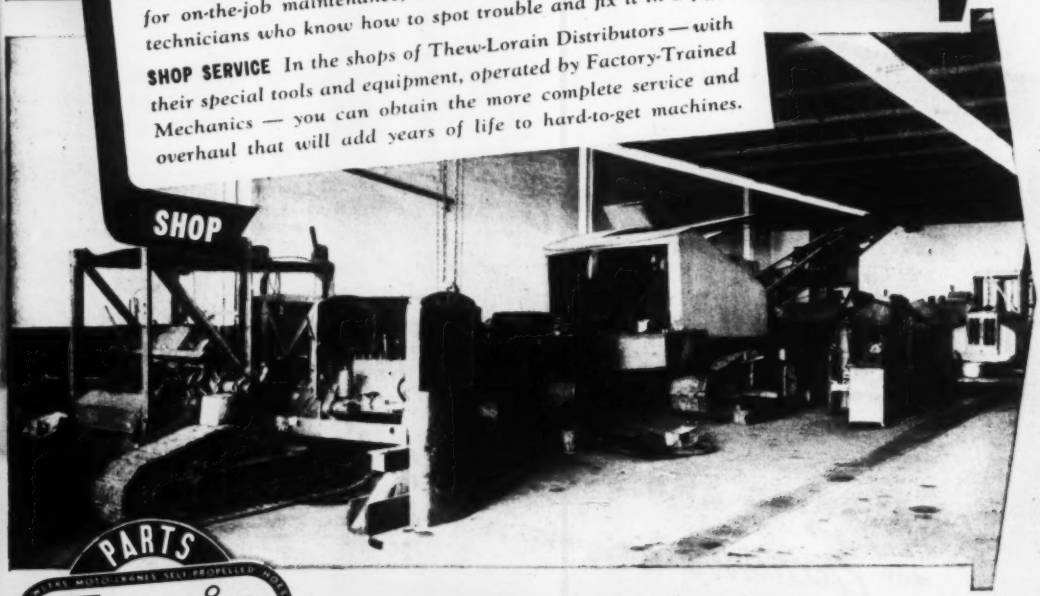

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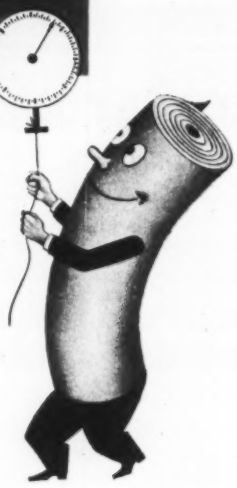

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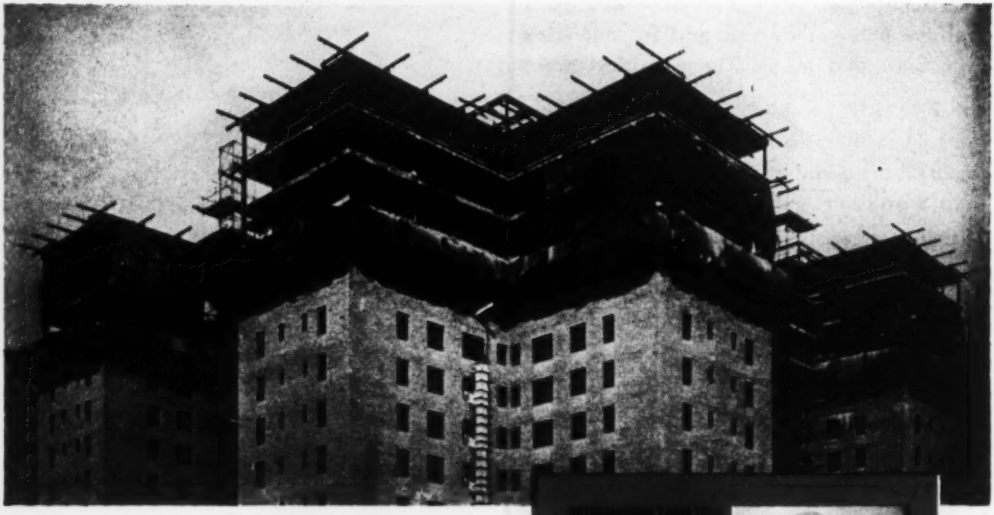

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OBITUARY

Ernest A. Perry, 57, who built presidential reviewing stands across the street from the White House in Washington, D. C., for the last seven inaugurations, died Aug. 12 at Beverly Beach, Md. He was construction superintendent for a Washington, D. C., building contractors' firm.

James E. Gillespie, 64, a Wisconsin highway construction engineer, died at Waukesha, Wis., Aug. 8. He was an engineering graduate of the University of Wisconsin, 1908. He was with the U. S. Army Engineers in France in the first world war and then with the army of occupation in Germany. He was with the Wisconsin highway commission a long time, and then formed his own construction company for highway work in Wisconsin and street paving in Chicago.

J. Harry Moore, 42, of the engineering faculty of the University of New Brunswick, Fredericton, N. B., and heading J. Harry Moore & Associates, an engineering firm at Fredericton, died Aug. 15, in London, England. He was president of the Association of Professional Engineers of New Brunswick. He was graduated from the U.N.B. engineering school in 1933, and in 1934, received an M.Sc. degree from the Massachusetts Institute of Technology. He spent two years studying on a scholarship at Cambridge University, England, on structural engineering designing. He had been with the Dominion Bridge Co., Montreal, before joining the U.N.B. faculty.

Wm. D. Ryan, 81, of San Diego, Calif., a road construction engineer in California for many years, died at Point Pleasant, N. J., Aug. 19.

James M. Coughlin, 66, a civil engineer with the New York State Highway Department, died Aug. 15 in Buffalo. He was graduated from Cornell University in 1908. He was a control engineer for the Reconstruction Finance Corp. in Washington before being transferred to Buffalo.

Clarence E. Underwood, 69, Columbus, Ohio, retired surveyor and Franklin County engineer's deputy, died Aug. 15.

John R. Darrow, 73, president of the Darrow & Barron Roadbuilding Co., died in Waukegan, Ill., on Aug. 10. He had been road commissioner for Waukegan County for 16 years.

(Continued on page 78)

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"From coast to coast, their representatives provide prompt service – the kind of service you need when filing deadlines get close. I would advise young contractors to start out with the *right* surety. Its name will re-enforce your own reputation. Its resources and facilities will give you room to grow . . . to bid on any kind and size of job in any location."

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FLEXIBLE! High quality materials and built-in toughness give this hose less bulk, more flexibility. That means real handling ease.

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TRANSMISSION BELTING • VIBRATING CONVEYORS, FEEDERS AND SCREENS

OBITUARY . . .

Edward Peterson, 81, until recently president of the Edward Peterson Co. heavy contracting firm, died Aug. 15 in Omaha, Neb. A former senior partner in the contracting firm of Peterson, Shirley & Gunther, Mr. Peterson's construction career included work on the Pennsylvania Turnpike, the Madden Dam and others in the Panama Canal Zone and hundreds of miles of railroads in the U. S., Cuba and Canada.

Roy E. Young, 76, formerly with the engineering department of the Union Pacific Railroad and Colorado & Southern Railroad, died Aug. 17 in Denver, Colo. After being graduated from the University of Iowa engineering school in 1898 he worked in Salt Lake City and then opened his own engineering firm in Denver. He retired from the Colorado & Southern Railroad in 1942.

Frank P. Cutter, 81, former superintendent of streets at Wakefield, Mass., and for some time a member of the engineering department of the then Massachusetts Highway Commission, died at Nashua, N. H., Aug. 17.

Leslie A. Forsyth, 55, Des Moines, Iowa structural engineer, died at Des Moines, Aug. 19. As chief engineer for Keffer & Jones, Des Moines architects and engineers, Forsyth designed about 100 Iowa school buildings. He had been employed by the firm for 30 years. He was a graduate of Iowa State college, Ames.

Maurice D. Plummer, 44, died in Jackson, Calif., July 23. He was employed by contractors on important projects in California, and he had been with the Tennessee State Highway Department at Nashville, Tenn. Honorary bearers were from the personnel of the Tennessee department and members of the Tennessee Road Builders Association.

John P. Emshwiller, 58, a structural design engineer who spent 25 years in government service, died Aug. 11 in Baltimore, Md. He had retired from the Coast Guard last March. He received an engineering degree from George Washington University. He devoted most of his professional career working, successively, for the Supervising Architects' Office, Public Buildings Administration, Veterans Administration, and at the time of his retirement, with Headquarters, Coast Guard, where he was Chief of the Structural Design Section. He specialized in earthquake analysis and design.

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It won't bury itself in a muddy sump . . . can't suck grit and water into the motor or bearings. An automatic governor idles pump when suction runs dry — saves air and wear. Easy to handle . . . compact, lightweight.

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LABOR

Special formula set for building wages

Construction industry wage controls will not tie construction wages automatically to changes in the cost of living—as the Wage Stabilization Board has done for other industries (ENR Aug. 16, p. 93).

Instead, the Construction Industry Stabilization Commission—with WSB approval—has adopted its own 10% formula. It will work like this:

Upon application, CISC will approve increases in construction industry area rates up to 10% above the area rates in effect on June 24, 1950—or on July 1, 1950, if such a raise was agreed on before June 24. (CISC figures this would represent, roughly, the increase in cost of living since then.) The 10% thus provided will not be increased again before January 1, 1952.

In special cases, CISC will approve on a case-by-case basis higher increases for manpower reasons, or to correct inter-area or inter-craft wage inequities.

Construction wages are stabilized by areas, and CISC will announce approved area rates from time to time.

• **Policy key**—Key to the new policies of both WSB and CISC is a decision to preserve so-called "real wages" at what they were last January.

That is to say that WSB figures to permit adjustments that will make allowances for fluctuations in living costs as reflected in the Consumers' Price Index of the Bureau of Labor Statistics. Theoretically, with these periodic adjustments, an hour's work would buy the same essentials of living that it bought before the wage-price freeze of last January.

The effort to preserve the "real value" of wages was looked upon by observers as opening the door to much larger wage increases than would have been possible under previous rules.

• **Base not right**—CISC members made up their minds on this policy after deciding that the January, 1951, base used by WSB for cost-of-living adjustments in other industries was inappropriate for construction, because most construction wages are fixed in the Spring.

Public, industry and labor members of the agency were unanimous in the new policy decision.

Missouri-Illinois labor to bring Congress probe

Reports of bad labor conditions that were causing contractors to shy away from bidding in the Eastern Missouri-Western Illinois area (ENR, Aug. 30, p. 24) had some repercussions in Congress last week.

Sen. Hubert Humphrey, chairman of the Senate labor-management relations subcommittee, said he is sending a committee investigator to St. Louis this week to check on reports of labor racketeering on construction projects.

If any of the reported practices involve defense projects, the matter will be referred to the Senate subcommittee on preparedness which has more direct jurisdiction, Humphrey said.

St. Louis newspapers were making these charges:

1. An official of the AFL Building Laborers and Hod-carriers' Union (local 42) solicited a pay-off of more than $50,000 from developers of a housing project.

2. A heating contractor claimed he had been forced out of business because he disobeyed "orders" from an official of Local 562, AFL Steamfitters' Union, not to bid on government work without permission.

Both charges have been categorically denied by officials of the unions.

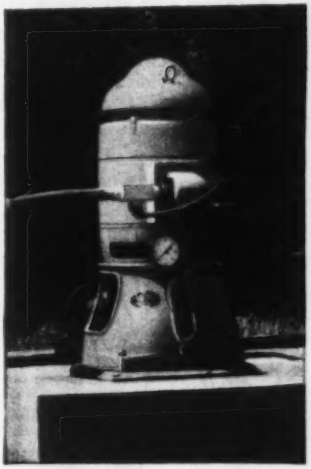
Additionally, the newspapers reported that costs were skyrocketed on a $23 million power plant completed last fall near Wood River by the Illinois Power Co. The journal quoted E. S. Hight, company vice-president, as saying that costs of the plant were raised by excess charges for labor. "The unions insisted on non-working stewards, for example," Mr. Hight was quoted as saying, "and the contractor had to pay these men who did nothing but see that things 'went smoothly'."

Above-scale wages reported in flood area

Payment of bonuses above union scales are being reported in the Kansas-Missouri area affected by recent disastrous floods, because of extreme shortage of skilled labor. Observers said that some truck drivers have demanded—and are receiving—$100 a week, and common labor in some places is getting 25 cents an hour over the $1.75 scale.

Perrin D. McElroy, business manager of the AFL Building and Construction Trades Council at Kansas City told reporters that these cases are

(Continued on page 82)



FOR THE CITY OF

TOMS RIVER, New Jersey

With her population more than doubling during the summer season, the resort city of Toms River, New Jersey was facing a serious water shortage. Five old, inefficient and not too dependable wells were being operated with suction pumps. Layne was called in for a discussion of what could be done with limited funds. Layne's recommendations resulted in a contract for the rebuilding and re-equipping of one old well and the drilling and equipping of a new one. The contract also called for an auxiliary, gasoline engine drive on one of the pumps for use in case of electric power failure. Without delay everything was finished according to the contract, giving the city of Toms River a water supply that more than fulfills their present needs.

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Labor . . .

isolated ones, but added he didn't blame the men for taking bonuses—considering the conditions under which they are often asked to work in clearing debris and restoring services.

Skilled trades are in high demand, and can work seven days a week if they wish, as industries in the area rush to get back into production.

Labor briefs . . .

• **Rochester raises**—WSB has approved wage scales for Rochester, N. Y., building trades under terms of two-year agreements negotiated in 1950. Under the decision, union men will get increases of 1 to 4 cents an hour. The approval also extends to the pension plan of Local 11, Masons, Bricklayers and Plasterers' Union, where a 15-cent an hour increase is to be set aside for pension payments.

• **End Virginia strike**—AFL building tradesmen called off a two-day strike at Arlington, Va., after they had protested working on a school construction project alongside non-union workers.

• **Halt Michigan work**—Construction work on five defense-industry plants in the area of Flint, Michigan, has been halted while union electricians await WSB decision on their demand for a 10-cent an hour wage increase to bring their scale to $2.55 an hour.

• **Protest materials curbs**—Representatives of construction industry labor groups met with contractors and state officials at St. Paul, Minn., to protest curtailment on building materials that they said would seriously affect Minnesota construction work.

• **Safety record**—The Tennessee Valley Authority said it had chalked up a new safety record for the year ending June 30, with less frequent and less severe accidents than at any time in its 19-year history. Frequency rate for all operations for Fiscal 1951 was 5.5 chargeable injuries per million man-hours; compared with an 18-year average of 16.8.

• **Union shop elections**—The National Labor Relations Board sharply criticized the Taft-Humphrey Bill to drop the Taft-Hartley union shop and other elections in the construction industry. The NLRB claimed to be neutral, but wanted the Senate labor-management subcommittee to clarify the language. Present wording makes it difficult to determine what is the "construction industry," NLRB said.

CONSTRUCTION BUSINESS

Contract awards hold to strong pace

Holding to the pattern of a strong upward movement followed through most of the year to date, contract awards for engineering construction mounted by $1,164,682,000 for the month of August, Engineering News-Record reports show.

The month's total—although $213,958 below July—brought total of awards for the first nine months of 1951 to $9,807,284,000, a 23% advance over the figure for the same period of 1950.

• **Leaders**—As it has done for the greater part of this year, private industrial construction led all other categories with another substantial upsurge. For the month, contracts for this classification totalled $307.5 million, to bring the cumulative total for the nine-month period to $2.9 billion. This represents an advance of 217% over 1950.

A strong second—as it was last month (ENR Aug. 2, p. 74)—was public residential construction. With awards totalling only $34.7 million, this category had a cumulative total of $551.6 million for the nine months, to register a 181% gain over 1950.

Other types of public buildings were also on the rise during the month. Unclassified was up 178% over 1950; other public buildings were up 40%; sewerage was up 19%; earthwork and waterways was up 13%.

In the private construction listings, only one category (other than industrial) showed a gain. That was bridges, where awards for the nine-month period were up 82% over 1950.

• **Losers**—Still in the pattern enforced by controls and national emphasis on saving materials and labor were most other listings in the reports. Biggest drop-offs were in private housing—down 46%; and commercial building, down 30%. A total of $190 million was awarded for commercial residential work for the month, to bring the year's figures to $1.3 billion, compared to $2.4 billion in 1950. Private unclassified was also down, by 17% under 1950.

Public works including waterworks, bridges and streets and roads also were down for the month.

DPA reports big backlog of amortization requests

Defense Production Administration officials have announced that the agency had 9,000 applications on file for quick amortization of defense plants when the 60-day moratorium was declared on August 18.

Pending applications cover proposed expenditures of more than $3 billion for defense facilities, DPA said.

Before the 60-day halt was called, DPA had approved 3,343 applications, calling for expenditure of $9.1 billion in expanded defense plants and facilities.

The moratorium on rapid tax amortization was called by Charles E. Wilson, director of the Office of Defense Mobilization, after some members of Congress had sharply criticized the policies of the DPA in handling the quick tax write-offs. DPA is now reviewing its policies.

Construction costs steady for 4th month

For the fourth consecutive month, the construction scoreboard shows only small advances in the cost of construction, according to ENGINEERING NEWS-RECORD's Construction Cost and Building Cost indices.

The construction cost index for September is 543.21, up only 0.08% over August. The building cost index moved up 0.1% for a September reading of 400.50. (See also pages 17 and 19 this issue.)

This month's construction cost figure is 2.4% above September, 1950 and building cost for the month is 1.9% over September, 1950 figure.

• **Material prices steady**—Index figures on material prices reflected only small changes. One lumber component was up; another was down. ENR's 20-city average priced 2 x 4 Fir at $104.706 per Mfbm. This was a drop of 0.5% from August and a decline of 8.2% from September, 1950. Pine 2 x 4 was quoted at $91.666, representing an increase of 1.2% over August, but down 7.8% from September, 1950.

Bulk cement, per barrel, was priced at $3.167 on the 20-city average. This is 0.1% over August and 6.4% over

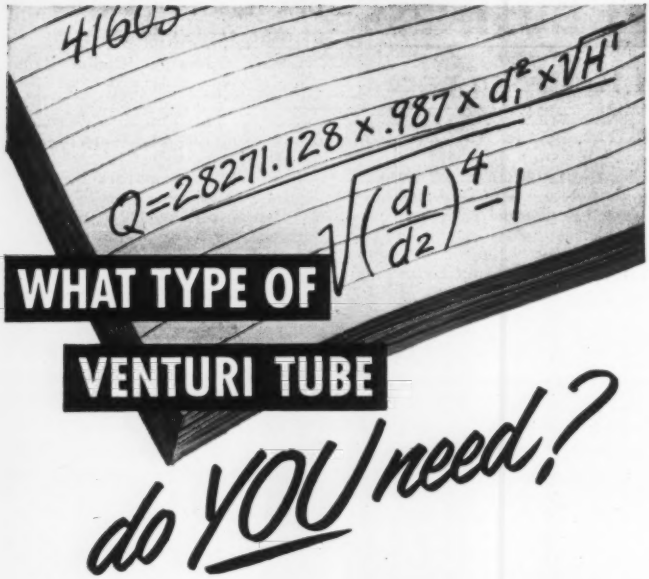
(Continued on page 84)

ENGINEERING CONSTRUCTION CONTRACTS REPORTED TO ENGINEERING NEWS-RECORD—AUGUST, 1951

Engineering News-Record reports continental U. S. construction projects of the following minimum costs — Waterworks, excavation, drainage and irrigation, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000

Five Weeks — Thousands of Dollars (000 Omitted)

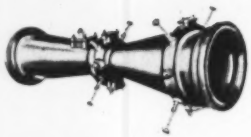
	August, 1951							—U. S. Cumulative— Eight Months		% Change	Canada August,
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	1951	1950	'50 to '51	1951
Public Works											
Waterworks	479	7,891	2,128	2,725	3,761	1,679	**18,663**	**150,029**	154,984	− 3	2,074
Sewerage	1,326	4,107	4,840	4,741	9,057	6,814	**30,885**	**214,201**	180,322	+19	1,130
Bridges	6,028	1,528	6,725	5,187	5,248	5,639	**30,355**	**211,125**	242,233	−13	502
Earthwork and waterways	44	534	701	210	7,446	15,113	**24,048**	**354,033**	313,149	+13	3,648
Streets and roads	11,654	26,251	21,787	17,149	42,298	13,683	**132,822**	**807,514**	889,248	− 9	6,673
Public buildings, residential		23,228	1,138	3,221	3,691	3,438	**34,716**	**551,660**	196,332	+181	30,540
Other public buildings	24,617	33,109	25,152	29,756	32,872	34,035	**179,541**	**1,572,584**	1,120,393	+40	27,599
Unclassified	3,066	31,991	7,135	4,286	25,594	21,158	**93,230**	**757,442**	272,475	+178	19,329
Total public	**47,214**	**128,639**	**69,606**	**67,275**	**129,967**	**101,559**	**544,260**	**4,618,588**	**3,369,136**	**+37**	**91,495**
Federal government (included in above classifications)	7,452	51,255	15,443	8,348	40,400	44,475	**167,373**	**1,789,616**	891,449	+99	68,623
Private											
Bridges		500					**500**	**11,577**	6,345	+82	
Industrial buildings	4,865	30,491	88,093	55,585	59,716	68,717	**307,467**	**2,876,475**	908,262	+217	57,171
Com'l. buildings, residential	1,498	114,414	25,348	23,292	18,864	6,820	**190,236**	**1,334,319**	2,451,659	−46	3,650
Other commercial buildings	5,895	17,638	11,466	8,470	8,755	10,140	**62,364**	**465,032**	668,428	−30	2,488
Unclassified		2,500	21,261	1,004	14,128	1,995	**40,888**	**501,293**	601,056	−17	300
Total private	**12,258**	**165,543**	**146,168**	**88,351**	**101,463**	**87,672**	**601,455**	**5,188,696**	**4,635,750**	**+12**	**63,609**
Total Engineering Construction:											
August, 1951 — 5 weeks	**59,472**	**294,182**	**215,774**	**155,626**	**231,430**	**189,231**	**1,145,715**				**155,104**
July, 1951 — 4 weeks	165,144	226,172	282,146	227,025	248,426	229,727	**1,378,640**				157,211
August, 1950 — 5 weeks	48,641	271,372	259,065	142,772	297,552	145,280	**1,164,682**				74,621
Eight Months — 1951	**463,060**	**1,850,318**	**2,072,215**	**1,724,859**	**2,300,615**	**1,396,217**		**9,807,284**		**+23**	**822,429**
Eight Months — 1950	379,699	1,952,453	1,255,237	1,153,141	1,950,546	1,313,810			8,004,886		432,410
% Change '50 to '51	+22	−5	+65	+50	+18	+6					+90

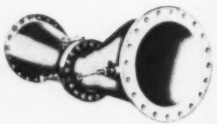


WHAT TYPE OF VENTURI TUBE do YOU need?

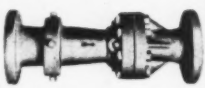
1. Steel plate tube with cast iron throat section for measurement of clear water, air or gases.

2. Cast iron Venturi Tube with hand holes and cleaning valves at main and throat sections, for municipal sewage and trade wastes.





3. Cast iron Venturi Tube with flat invert and single cleaning valve at main and throat sections. Specifically used for sludge.



4. Cast steel or cast iron Venturi for hot or cold water and adaptable for boiler feed high pressure service.

IT'S SIMPLEX IT'S ACCURATE

SIMPLEX makes Venturi Tubes for measuring cold water, raw sewage, trade waste, sludge, process liquor, boiler feed, air and gases.

These tubes come in many sizes and different designs, some of which are pictured above. This means there's a particular tube to fit specific needs.

Write, stating your Venturi Tube requirements, to Simplex Valve & Meter Company, Dept. 9, 6751 Upland Street, Philadelphia 42, Pa.

SIMPLEX

VALVE AND METER COMPANY

Construction business . . .

last September. On the average, there was no price change for structural steel.

For the first time in several months, no change was reported on the average for either skilled or common labor rates. Average rate for common labor remained at the August level of $1.637 and the skilled rate average was again $2.701.

Common brick, not included in the index calculations, was quoted at $31.051 per M, reflecting an increase of 0.2% over August.

• **No change**—Detailed reports gathered for ENR's monthly price survey showed that 10 of the 20 cities—Atlanta, Seattle, Pittsburgh, Philadelphia, Minneapolis, Los Angeles, Kansas City, Birmingham and Montreal reported no significant changes in any of the prices covered.

With the exception of steel items, material supplies were reported generally good, although in Dallas and Boston, cement supply is not adequate to meet current demand. Lumber supply is plentiful, and in some cities, Denver, for example, dealers are beginning to pare down excessive inventories.

Lumber prices fluctuated from city to city. In St. Louis, Fir 2 x 4's were down about $2.25 per Mfbm, while Pine was up about the same amount. Fir 2 x 4's in Denver dropped about $8.00 per Mfbm, and $5.00 in New Orleans. Douglas Fir 2 x 4's in Detroit were up 75 cents per Mfbm.

Business briefs . . .

• **Structural steel**—July bookings of fabricated structural steel totaled 223,795 tons, an increase of 7.6% over June, the American Institute of Steel Construction reported this week. Total booking for the first seven months of this year was 19.5% more than in the same period of 1950.

• **Cement production**—Portland cement production for July was 8% greater than in July, 1950, the Bureau of Mines reported. Production for this July was 22.4 million barrels of finished portland cement. Mill stocks were 14% higher this July than they were a year ago.

The Economic Co-Operation Administration has signed an agreement which will supply Norway with the equivalent of $24 million in Marshall Plan counterpart funds for a new aluminum plant. The loan will be repaid over a period of 10 years in the form of 7,800 tons of aluminum per year.

MATERIALS AND LABOR PRICES

Market quotations on construction materials and wage rates reported monthly by ENR correspondents
October Materials, and Labor Prices will appear in October 4, 1951 issue

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8 x 8 x 16-in.; truckload del.; per block		CONCRETE Ready Mixed 1:2:4, over, 50 c.y., del.
	Paper	Bulk	Mortar	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand	grav.	Lt. wgt. agg.
Atlanta	$3.76	$3.45	3.25	$2.00	$2.00	$1.75	$2.10	$2.10	$1.65	$1.85	$0.191	$0.191	$11.50
Baltimore	3.68	3.37	3.33	2.50‡a	2.50‡a	2.00‡a	2.70‡a	2.80‡a	2.60‡a	2.55‡a	.17	.17a	10.80
Birmingham	3.11	2.68	2.82g	2.24n	2.24n	1.94n	2.50	2.50	1.10	1.30	.165	.165	7.85
Boston	4.01	3.69	3.58	2.50a	2.50a	2.50a	1.50a	1.60a	....	....	.206	.22a	11.50h
Chicago	3.29	2.99	3.94	3.00‡b	3.00‡b	3.40‡b	3.00‡b	3.00‡b	2.00‡	2.00‡	.22	.22b	11.50
Cincinnati	3.46	3.18	3.16	2.00‡e	2.00‡e	2.05‡e	2.35‡k	2.35‡k	....	....	.21	.225a	10.95f
Cleveland	N. A. in C. L.		....	2.05ef	1.85f	1.65	3.65a	3.65a	2.85‡	2.85‡	....	.23	13.00g
Dallas	2.95	2.65	2.70	2.18	2.28	1.84	2.22	2.38	....	....	.125e	.215	9.30
Denver	3.89	3.64	3.89	1.85	2.00	1.20	....	....	....	....	.22	.255a	10.10
Detroit	3.25f	2.98	3.04	4.00‡b	4.00‡b	3.50‡b	4.00‡	4.00‡	4.00‡	4.00‡	.19	.20a	10.55f
Kansas City	3.30	3.03	3.15	1.90‡	1.90‡	1.50a	1.90‡a	1.90‡a	....	....	.23ag	.23/.24e	10.95b
Los Angeles	4.00a	3.52a	4.72	1.95a	2.20a	1.95a	2.08a	2.08a	....	....	.11f	.22	10.00‖m
Minneapolis	3.68ed	3.37ed	3.33	2.30‡ag	2.30‡ag	1.35‡ag	2.50‡ag	2.50‡ag	....	....	.23ak	....	11.25/k
Montreal	2.66ac	2.51ac	....	2.50	2.50	2.00i	1.05ij	1.30ij	....	....	.28	.20a	9.95ak
New Orleans	3.20e	2.90e	3.18	2.32	2.32	1.82	....	....	1.05	1.25	.25	....	12.90
New York	3.81	3.50	3.35	2.35bk	2.35bk	1.60bk	2.50bl	2.50bl	....	....	....	....	11.40an
Philadelphia	3.38/3.68‡	3.07/3.37‡	3.38‡	2.68‡	2.75‡	2.15‡	2.10‡	2.15‡	1.75	1.65	.22/.25	....	11.50
Pittsburgh	3.32	3.04	3.32	2.15‡	2.15‡	2.10‡	2.60‡	2.60‡	2.15	2.15	.23d	.23d	11.00
St. Louis	3.25/3.45b	2.95/3.10b	3.10/3.25	2.90am	2.70am	2.30/2.70am	1.70j	1.70j	1.25	1.25	.21h	.27et	10.40
San Francisco	3.35	2.95	....	1.88	1.88	1.98	1.98	....	....	....	....	.22cl	10.30e
Seattle	3.80a	3.25a	4.50h	3.00‡bm	3.00‡bm	3.00‡bm	3.50‡bm	3.50‡bm	....	....	.24j	.332‡j	10.95j

‡ Delivered. * Prices incl. dealers comm. except as noted.

CEMENT: a Subj. to 10¢ dis. b Less 2% for cash. c CL price dealers' comm. not incl. d Dealers sell only LCL. e Plus switching charges. f Paying up to $3.80 for cement brought in from outside sources. g Warehouse pickup. h LCL.

SAND, GRAVEL, STONE & SLAG: a Truck lots. b Per cu. yd. c 5 tons or more. e ¼". f Pea gravel. g Less 5% for cash. h Less than 5 tons. i Sales tax incl. j F.o.b. quarry. k Barge lots asd. l F.o.b. scow Hudson river. m Less 2% for cash. n F.o.b. cars.

CONCRETE BLOCK: a Cinder. b Waylite. c Haydite. d Celocrete. e 5½ x 8 x 12 in. f 8 x 4 x 16. g F.o.b. truck at job. i Less 2% for cash. j Less 1% for cash. k 8x8x16. l F.o.b. plant San Rafael.

READY MIXED CONCRETE: a 5 cu. yds. or over del. Man. b 25 cu. yds. or more. c 10–100 cu. brackets. e 2,000 lb. concr. f 2500 lb. comp. g Aver. haul 7–9 mi. zone. h Less 50¢ for cash. i 5% off for cash. j 2% off for cash. k Sales tax included. l 1:2½:4. m F.o.b. yard. n Plus escalator clause.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10c. per bbl. for payment within 15 days of date of invoice. Subject discount 10c. per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 30¢ per bbl., not refundable

	Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$2.60†	Buffington, Ind.	$2.55†	Steelton, Minn.	$2.65†	Muskegon, Mich.	$2.70†	Toledo, O.	$2.60†
Clinchfield, Ga.	2.60†	Independence, Kan.	2.50†	Leeds, Ala.	2.45†	Saginaw, Mich.	2.60†	Milwaukee, Wis.	2.75†
Kingsport, Tenn.	2.60†	Hannibal, Mo.	2.55†	Duluth, Minn.	2.65†	Wyandotte, Mich.	2.60†	Green Bay, Wis.	2.75†
West Des Moines, Iowa	2.65†	Northampton, Pa.	2.60†	Hudson, N. Y.	2.60†	Buffalo, N. Y.	2.60†	Ironton, O.	2.60†
Nazareth Pa.	2.60†	Universal, Pa.	2.65†	Alpena, Mich.	2.50†	Oswego, N. Y.	2.75†	Montreal City	2.31
Bath, Pa.	2.60†	Waco, Tex. (+ 10¢ tax)	2.50†	Detroit, Mich.	2.60†	Cleveland, O.	2.60†	W. Winfield, Pa.	2.65†

†*Prices to hold for third quarter of* 1951.

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80–300 penetration		CUTBACK ASPHALT Per ton		ROAD OIL Per gal.	ASPHALT EMULSION (Quick-breaking) Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	$73.00	$35.00	$2.25	.....	....	.....	.....	.....	.....	.....	.....	.....
Baltimore	150.00‡	57.70‡	.....	$22.00	.....	$.0809	$0.15	$.09w	$.17w	$.09x	$.09	$0.12
Birmingham	.....	45.50i	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston	.....	.....	.....	24.50a	$35.50a	22.00c	35.50c	.105a	.22	.09a	.105	.22
Chicago	155.00‡	90.00‡b	4.40/4.60‡f	20.25b	30.25b	19.25bw	29.25bw	.0875bw	.16w	.075b	.....	.....
Cincinnati	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
Cleveland	180.00	55.00d	4.12g	23.00[4]	....	23.00[4]	....	.1025[4]w	.194w	.....	.11[4]	.19[4]
Dallas	e	40.00	e	23.95	42.99	.1012	.1898	26.99	47.77	.0987	.1062	.1423
Denver	.....	48.00	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	92.00	.....	26.45	....	26.45e	.....	.117w	.....	.0925	.....	.2166
Kansas City	e	e	e	18.55el	....	.....	.....	.0725ew	.....	.0635e	.....	.....
Los Angeles	e	.....	e	15.50dmz	.....	15.50dnz	.....	17.00dz	.....	16.00de	.0825f	.1525f
Minneapolis	.....	.....	2.83h	23.90	.....	22.90	.....	.0994w	.....	.0894	.1035	.....
Montreal	137.00	e	e	27.00n	36.65n	.135n	.183n	16.30nu	18.80nu	.132n	.187ns	.229ns
New Orleans	.....	.....	.....	17.50	....e	17.50ev	.....e	.085ew	.....e	.0882	.085	.....
New York	.....	.....	3.12f	26.26	47.59q	25.26s	46.58qs	.1071w	.1971qw	.1071	.1072	.1993q
Philadelphia	175.00	110.00	4.06	22.00	....	.....	.....	.095w	.....	.....	.....	.....
Pittsburgh	165.00	48.00	4.60	23.00	37.00	.10	.20	27.00	39.00	.095	.09	.20
St. Louis	.....	.....	.....	19.25f	.....	.1698	.....	.0865/.080w	.....	.15	.....	.....
San Francisco	.....	.....	.....	17.00g	32.50gp	17.00gkv	32.50g	19.00g	36.50g	17.50w	.085y	.....
Seattle	.....	.....	.....	17.00h	37.50h	16.25hv	.....	19.50h	.....	18.50hv	.095h	.105h

‡ Delivered.

PAVING BRICK & BLOCK: a CL. b 3½ x 4 x 8½. c 2½ x 8½ x 4. d LCL truck deliveries. e Not used. f 2" interior 6¢ treat. g 3". h 8¢ treat. i 3 x 3½ x 8½.

ASPHALTS: a Price at plant, Everett, Mass. b F.o.b. refinery, Lockport, Ill. c F.o.b. Sugar Creek, Mo. d F.o.b. refinery, El Segunda. e F.o.b. Baton Rouge. f F.o.b. Wood River or Roxana, Ill. g F.o.b. Richmond, Calif. h F.o.b. Martinez. i Bulk refinery. j F.o.b. refinery, Englewood, Calif. k 50–110 penetr. l Less than 100 penetr. m 40–80 penetr. n Tax incl. o Drums not avail. p Shipped in steel bbl. q Used drums. r In customer's drums. s Shipped in drums, per drum. u Per 100 gal. v Per ton. w Per gal. x Also tank trucks. y F.o.b. Oakland. z. F.o.b. refinery Cleveland.

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES— CARBON STEEL	PLATE CARBON STEEL	REINF BARS billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	Light	Re-rolled	TRACK SUPPLIES Angle Bars	Std Spikes	Tie Plates	Track Bolts
Birmingham Area	$3.65	$3.70	$3.70	$7.85		$72.00	$80.00	Not	$4.70	$6.15	$4.50	....
Chicago Area	3.65	3.70	3.70	7.85	$4.45	72.00	80.00	avail-	4.70	6.15	4.50	....
Pittsburgh Area	3.65	3.70	3.70	7.85	4.45	72.00	80.00	able	4.70	6.15	4.50	....
Buffalo Area	3.70	3.70	3.70	7.75	4.45	72.00	80.00	....	4.70	6.15	4.50	$9.85
Cleveland	....	....	3.70	7.85	....	.....	.....	....	....	....	....	9.85
Youngstown Area	....	....	3.70	....	....	.....	.....	....	....	6.15	....	....
Geneva	3.65	3.70	....	....	....	.....	.....	....	....	6.15	....	....
Los Angeles	....	....	4.40	....	....	.....	.....	....	4.70	6.15	4.50	9.85
Pueblo	3.65	3.70	3.70	....	....	72.00	80.00	....				

IRON AND STEEL PRODUCTS—F. O. B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	REINFORCING BARS Per 100 lb., base price u 5 tons to carload lot b New billet	Rail steel	Add switch	$/cwt for Del.	EXPANDED METAL LATH‡ Per 100 sq. yd., carload lots Std. diamond mesh, 3.4 lb.	Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING‡d Per 100 sq. ft., carload lots 4x16 in., No. 5 & 10 wires	4x12 in., No. 8 & 12 wires	6x6 in., No. 6 & 6 wires
Atlanta	$6.80	$6.65	$6.65	$.025	$.10	$31.50	$31.50			
Baltimore	6.54	5.49l	....	....	.10	42.00	45.00			
Birmingham	5.70	5.75	5.75	.05	.15	47.00p	52.00p			
Boston	6.20ak	6.19ck	6.19ck	....	.15	40.50	44.50			
Chicago	5.70	4.95ff	4.95ff	.0625	....	34.50‡	38.50‡			
Cincinnati	6.24ak	5.84r	....	....	....	38.50uzee	41.50uzee			
Cleveland	5.82	4.81v	....	....	.10	37.00‡	40.00‡			
Dallas	8.85	7.00	7.00	....	....	49.00	52.00			
Denver	7.20	7.10e	....	....	....	60.00s	72.00qs			
Detroit	6.09	5.74n	....	....	.20	53.00	58.00			
Kansas City	6.30knn	5.90ff	....	....	....	39.50	41.50			
Los Angeles	6.45hh	6.15q	....	....	.15	48.00	54.00kk			
Minneapolis	6.16hh	7.32ll	7.32ll	....	.30	37.00	40.00			
Montreal	6.75i	4.75i	4.75g	....	....	57.00h	59.00h			
New Orleans	....	5.55ok	....	.05	.10	40.00	40.00			
New York	6.30r	6.25	6.25	....	.30	38.50at	45.00at			
Philadelphia	5.90k	5.95k	....	....	....	38.00‡	42.00‡			
Pittsburgh	5.40/5.60	5.40/5.60	....	....	.10	34.00	36.00			
St. Louis	6.03a	5.34c	5.34c	....	....	47.00aa	53.00aa			
San Francisco	7.15ii	6.50A	....	....	.15	40.50	43.50			
Seattle	4.30e	5.55d	....	....	....	57.00mmm	47.00mmx			

A.P.M.* Joliet, Illinois, Donora, Penn., $2.66
F.o.b. Mill: Monessen, Penn., $2.76

A.P.M.* Joliet, Illinois, Donora, Penn. $1.87
F.o.b. Mill: Monessen, Penn., $1.93

A.P.M.* Joliet, Illinois, Donora, Penn., $2.79
F.o.b. Mill: Monessen, Penn., $2.89

* As Producing Mill.

‡ Delivered. b 1–5 tons, add 35¢. Less than 1 ton, add 50¢. c 20 tons or over base. d Mill price plus freight. e F.o.b. plant. f Includes delivery in free delivery zone. g 10,000 to 39,999 lbs. h List price. Dominion tax exempt. Provincial and Municipal tax extra. i Plus Dominion, Provincial and Municipal sales tax. j Price per ton. k F.o.b. city. l Intermediate and hard grade, new billet. m Per sq.yd. n 5–10 tons. o 5 to 15 tons base. p Del. of 500 sq. yd. or more. q Std. ribbed, 4 lb. per sq. yd. r 5 tons or over. s LCL. t Asphalt coated. u Note: Revised size extra — 1 in., 1¼ in., 1½ in., 10¢, ¾ in., ¼ in., 15¢, ⅞ in., 25¢, ½ in., 50¢, ⅜ in. 80¢, ¼ in. $1.90. v 20 tons. Straight. w Copper bearing. x 2.5 lb. per sq. yd. y $0.0093 transportation tax included. z Copper alloy. aa Delivered truck to job. Contractor to do unloading. bb F.o.b. dock. cc F.o.b. cars. dd Carload lots. ee 1% off for cash. ff Carload lots. gg Including sales. hh 10,000–19,999 lbs. ii Rolled at Geneva mill. 400–999 lbs. kk 1" ribbed. ll 5 to 8 tons, f.o.b. city. mm 2% off for cash. nn 1–5 tons. # 10 tons to CL. oo 20–9,999 lbs. A Correction: July and August also 6.50.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE Per net ton f.o.b. 6 in. to 24 in.a	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13–44T std. 8 in. s.s.	std. 12 in. s.s.	24 in. ds.	36 in. ds.	CLAY DRAIN TILE ASTM C4–24 Per 1,000 ft., carload lots, f.o.b. 6 in.	8 in.	CONCRETE SEWER PIPE Per ft., delivered: ASTMC 14–41 12 in.	24 in.
Atlanta	$99.00	$0.43	$0.67	$3.39gg	$7.00gg	$114.00	$140.00	$0.45	$2.00
Baltimore	109.00	.539	1.0395	4.23A	11.275A	178.20	274.80	.90	2.45
Birmingham	93.00	.42	.75	2.99	....	210.00‡	375.00‡	1.25m	2.75m
Boston	113.00	.532uvz	1.08uvy	4.41uvy	11.685uvy	187.80v	289.20v	1.55mg	3.80mg
Chicago	107.00	.65	1.25	5.10	13.50	150.00‡	270.00‡	.80	2.80
Cincinnati	106.00	.574	1.107	4.32	11.38	154.80	239.70	.75m	2.80m
Cleveland	108.00	.462x	.89x	3.69x	10.045x	158.00m	245.65m	.80m	3.00m
Dallas	107.00	.436	.822	3.234b	9.17b	.....	.....	.49	1.60
Denver	115.00	.43dd	.74dd	3.18dd	....	.....	.....	.74m	2.50m
Detroit	108.00	.70	1.35	5.35	14.40	240.00m	360.00m	.80	3.20
Kansas City	106.00	.50	.88	3.50	....	216.70	.....	.70	3.00g
Los Angeles	122.00	.54l	1.07l	5.24l	13.06l	228.20	348.90	.85	2.40ff
Minneapolis	102.86–112.00	.66mo	1.20mo	4.85mo	....	.....	.....	1.36h	3.87h
Montreal	100.00	.85z	1.50z	5.25z	....	.....	.....	106.50/kaa	282.70/kaa
New Orleans	101.50	.498	.905	5.03	....	229.70bb	402.00bb	.65	2.29
New York	111.00	.70	1.19	4.77	12.71	.....	.....	1.05	2.20
Philadelphia	110.00	.65	1.25	4.95A	12.65A	300.00‡	350.00‡	1.55h	3.75h
Pittsburgh	109.00	.386m	.752m	2.83m	7.622m	147.50	230.00	1.05h	2.50h
St. Louis	103.00	.51	.93	3.65	8.50	180.00	400.00	1.20il	2.85hl
San Francisco	122.00	.61d	1.20d	5.03d	12.57d	240.00dl	400.00dl	.95	3.20
Seattle	124.00	.51b	.91b	....	....	150.00e	.....	.88ee	2.64ee

‡ Delivered. a Class B & heavier. Based on existing freight rates; subject to rate change. Gas pipe and class A, $5 per ton additional. 4 in., $7 per ton additional, 30 in. and larger, usually, $1 per ton less. b Extra strength ASTM C 200–44T. c 4-in., $90. d SS361-A. e 30-in. g Culvert pipe. Reinforced, ASTM C76–41. h Reinforced, ASTM C75–41. i Reinforced, ASTM C76–37. j Centrispun. k Per 100 ft. l F.o.b. plant. m Truck delivery. o Listed price is based on LCL (no minimum). p Less than 5 tons, per price per ft. r Within switching limits. u ASTM C13–40. v C.L. f.o.b. origin, freight allowed. x 2 ft. lengths. y 3 ft. lengths. z CESA A 60–1941 specifications used. aa No. standard specifications in Can. bb Freight allowed to destination in city. cc Truck loads; f.o.b. plant, Newton. dd LCL, delivered, f.o.b. truck. ee 1% off for cash. ff 21". gg Extra strength ASTM C-200–50. A Standard strength.

*WROUGHT STEEL PIPE

Mill	Black %	Galv. %	Black %	Galv. %	Black %	Galv. %	Black %	Galv. %
	3½ to 6 in. Lap Weld‡		7 in. Butt Weld‡		8 in. Butt Weld‡		9 in. & 10 in. Lap Weld	
Lorain, Ohio	36.5a	15.5a	38.0c	18.0c	38.5a	17.5a	38.5a	17.5a
Aliquippa, Pa.	36.5a	13.5a	38.0c	15.5a	38.5a	15.5a	38.5a	15.5a
Sparrows Pt., Md.	33.5a		35.5a		36.5a		24.0ab	10.0ab
Benwood, W. Va.	24.0	22.0	24.0	22.0	24.0	22.0	24.0	22.0
Youngstown, O.	24.0	22.5	24.0	22.5	24.0	22.5	24.0	22.5
Indiana Harbor, Ind.	23.0	22.0	23.0	22.0	23.0	22.0	23.0	22.0
Sharon, Pa.	43.5	22.0	43.5	22.0	43.5	22.0	43.5	22.0
Wheatland, Pa.	43.5	22.0	43.5	22.0	43.5	22.0	43.5	22.0
Fontana, Calif.	42.5	32.0	42.5	32.0	42.5	18.5b	42.5	18.5b
	2½ & 3 in. Butt Weld‡							
Lorain, Ohio	43.5	41.5						
Aliquippa, Pa.	43.5							
Sparrows Pt., Md.	41.5							
Benwood, W. Va.	43.5							
Youngstown, O.	43.5							
Indiana Harbor, Ind.	42.5							
Sharon, Pa.	43.5							
Wheatland, Pa.	43.5b							
Fontana, Calif.	42.0b							

‡ Threaded and coupled. a 3½ to 4 in. weld. c 5 and 6 in.

* WROUGHT STEEL PIPE: Discounts from standard list consumers carload prices. Base price approx. $200 per net ton. List prices per ft.: *Butt Weld:* ⅛ in., 5½¢; ¼ in., 6¢; ⅜ in., 8½¢; ½ in., 11½¢; 1 in., 17¢; 1¼ in., 23¢; 1½ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢; 3 in., 76½¢. *Lap Weld:* 3½ in., 92¢; 4 in., $1.09, 5 in., $1.48; 6 in., $1.92. Freight rates to destination to be added to price plus 3 percent tax on transportation.

WROUGHT IRON PIPE: List prices per ft. same as wrought steelpipe. Discount for Pittsburgh base. *Butt Weld* — 1 in. and 1¼ in. black, + 48.0; 1½ in. black, + 14.0 galv. + 44.5; 2 in. black, 4 galv. + 34.5. *Lap Weld* — 2½ in. to 3½ in. black + 20.5. galv. + 47.5; 4½ in. to 8 in. black + 17.5, galv. + 43.0. Freight rates to destination to be added to name delivered price.

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F. O. B.

SHORT LEAF YELLOW PINE AND DOUGLAS FIR

All S. L. Y. P. is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)

All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1 Lengths up to 20 ft.

(Prices in italics)

	1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh
Atlanta	† **$73.00**	**$76.00**	**$67.00**	**$69.00**	**$73.00**	**$76.00**	**$75.00**	.....	.....
Baltimore	* **88.50**	**92.50**	**75.00**	**75.00**	**80.00**	**85.00**	**95.00**	.....	.....
	104.50g	*104.50g*	*98.50g*	*98.00g*	*99.00g*	*98.00g*	*109.50*	*$106.50*	*$106.50*
Birmingham	† **83.00**	**83.00**	**70.00**	**80.00**	**83.00**	**85.00**	**95.00**	.....	.....
	85.00	*85.00*	*75.00*	*80.00*	*80.00*	*79.00*	*85.00*	*85.00*	*85.00*
Boston	**99.00a**	**103.00a**	**99.50a**	**100.00a**	**103/106a**	**110.00a**	.....	.....	.....
	‡ *92.50*	*92.50*	*108/112*	*108/112*	*108/112*	*108/112*	*127.00*	*147.00*	*127.00*
Chicago	** **96.00**	**100.00**	**95.00**	**96.00**	**96.00**	**100.00**	**105.00**	.....	.....
	108.00	*108.00*	*98.00*	*106.00*	*106.00*	*106.00*	*110.00*	*110.00*	*110.00*
Cincinnati	* **94.00**	**96.00**	**84.00**	**89.00**	**94.00**	**96.00**	**118.00**	.....	.....
	112.00	*112.00*	*105.00*	*105.00*	*105.00*	*106.00*	*130.00*	*125.00*	*125.00*
Cleveland	** **90.00**	**95.00**	**86.00**	**92.00**	**94.00**	**100.00**	*120.00*	*125.00*	.....
Dallas	*k*† **78.00**	**80.00**	**69.00**	**58.00**	**59.00**	**59.00**	**98.00**	.....	.....
Denver	*	*Not in stock*		*125.00*	*127.00*	*128.00*	*135.00*	*137.00*	*156.00*
Detroit	‡ **106.00**	**108.00**	**100.00**	**107.00**	**110.00**	**113.00**	.....	.....	.....
	99.75	*100.75*	*105.75*	*106.50*	*105.50*	*104.00*	*120.00*	*120.00*	*120.00*
Kansas City	* **120.00**	**120.00**	**120.00**	**120.00**	**120.00**	**120.00**	.....	.....	.....
	120.00	*120.00*	*120.00*	*120.00*	*120.00*	*120.00*	*148.00*	*155.00*	*155.00*
Los Angeles	*l*	*90.00*	*90.00*	*88.00*	*88.00*	*88.00*	*100.00*	*105.00*	*100.00*
Minneapolis	*i*	*130.00*	*130.00*	*130.00*	*130.00*	*130.00*	*150.00*	*150.00*	*150.00*
Montreal	*ab*	98.00	110.00	95.00	100.00	110.00	125.00	.....	.....
		175.00	*175.00*	*175.00*	*175.00*	*175.00*	*175.00*	*175.00*	*170.00*
New Orleans	† **100.00**	**100.00**	**92.00**	**85.00**	**90.00**	**94.00**	**118.00**	.....	.....
	† *100.00*	*102.00*	*102.50*	*103.00*	*102.00*	*99.50*	*113.00*	*117.00*	*112.00*
New York	*j* **100/105**	**109/112**	**95.100**	**102[m]/107[m]**	**107[m]/112[m]**	**112[m],117[m]**	**150/160**	.....	.....
			Range from $115.00 to $120.00				*135/150*	*145/150*	*145/150*
New York	** **90.00**	**96.00**	**77.00**	**90.00**	**95.00**	**98.00**	**115.00**	.....	.....
	100.00	*100.00*	*105.00*	*105.00*	*105.00*	*105.00*	*112.00*	*124.00*	*124.00*
Philadelphia			**Range from $117.00 to $127.00**				**117/127**	.....	.....
			Range from $130.00 to $140.00				*130/140*	*140/150*	*140/150*
Pittsburgh	†		**Range from $85.00 to $90.00**				**90/105**	.....	.....
			Range from $95.00 to $100.00				*106/120*	*140/150*	*140/150*
St. Louis	*fc* **112.00***e*	**117.50***e*	**93.50***l*	**107.75***l*	**112.25***l*	**125.00***d*	.....	.....	.....
			115.50e	*126.00e*	*126.00e*	*126.50e*	*155.00e*	*160.00*	*160.00*
San Francisco	*A* † *65.00*	*65.00*	*70.00*	*69.00*	*69.00*	*68.00*	*67.00*	*75.00*	*75.00*
Seattle	† *82.50g*	*82.50g*	*82.50g*	*82.50g*	*82.50g*	*82.50g*	*82.50g*	*82.50g*	*82.50g*

	LONG LEAF Y. P.		PLYWOOD	
	Merchantable grade up to 20 ft.		Rail freight increment (See note for base price)	
	2x12 Rgh	12x12 Rgh	⅜"	¾"
Atlanta	.....	.....	$22.32	$27.24
Baltimore	**$155.00**	**$155.00**	22.86	27.90
Birmingham	**115.00**	**130.00**	21.78	26.58
Boston	.....	.....	22.86	27.90
Chicago	**134.00**	**134.00**	18.72	22.80
Cincinnati	**125.00**	**125.00**	21.78	26.58
Cleveland	.....	.....	22.20	27.12
Dallas	**108.00**	**98.00**	18.72	22.80
Denver	.....	.....	13.92	16.98
Detroit	.....	.....	21.78	26.58
Kansas City	.....	.....	16.56	20.16
Los Angeles	.....	.....	13.38*ab*	16.26*ab*
Minneapolis	.....	.....	16.56	20.16
Montreal	.....	.....	.....	.....
	.....	.....	21.78	26.58
New Orleans	**148.00**	**140.00**	18.72	22.80
New York	**210/240**	**210/240**	22.86	27.90
	.....	.....	.....	.....
New York	**190/200**	**190/200**	22.86	27.90
Philadelphia	**95/100**	**110/120**	22.56	27.48
Pittsburgh	.....	.....	18.72	22.80
St. Louis	.....	.....	.....	.....
	.....	.....	10.08*a*	12.30*a*
San Francisco	.....	.....	.....	.....
Seattle	.....	.....	.....	.....

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL. 1. Retail, LCL, at yard. ♯ Retail, LCL, deliv. 2. Deliv. truck lots. 3. asd.

LUMBER: **Bold Face type, Southern Pine.** *Italics, Douglas Fir.* ^ *a* Spruce *b* Tax exempt. *c* 5M lots. *d* 8-12 ft. lengths. *e* 8-16 ft. lengths. *f* 18 ft. or under. *g* No. 1 common. *i* 8 ft. lengths. *k* No. 3 common *l* 8-10 ft. lengths.

A Rail freight rate from Northwest mills to San Francisco are $11.50 to $15.00 per M ft bm. From Northern Calif. mills $9.00 by rail $12.00 by truck to yard with surfaced stock $2.00 to $3.00 less.

PLYWOOD: Special concrete form grade Fir Plywood, 4' by 8' panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on ⅜", $204.00; on ¾", $231.00. For other centers add rail freight increment from table on proper size. Oiling and edge sealing charges included. *a* Lower rate by water shipment. *b* 50,000 lb. minimum.

* Freight rate increase of 6¢ per cwt., not included in these figures.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS: Discounts from jobbers list, Feb. 1, 1950a, Single or Double Thickness, A quality	WINDOW GLASS: B quality	EXPLOSIVES: Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*
Atlanta	79%	80%	$0.2275
Baltimore	70–10%	78–10%	.2275
Birmingham	83%	83%	.1750
Boston	79–10%	79–10%	.2275
Chicago	78%*f*	78%*f*	.2275
Cincinnati	78%	78%	.2275
Cleveland	78–10–10%*f*	78–10–10*f*	.2675
Dallas	75%	75%	.2350
Denver	81–5%	81–5%	.2325
Detroit	78–10–10%	78–10–10%	.2275
Kansas City	80–10%	80–10%	.2325
Los Angeles	75%	80%	.23
Minneapolis	78–10%	78–10%	.2325
Montreal	45–15%*bc*	45–15%*bc*	20.00*hi*
New Orleans	78%	77%	.2325
New York	82%*f*	82%*f*	.38*g*
Philadelphia	76%	78%	.2275
Pittsburgh	82%	82%	.20
St. Louis	80–10%	80–10%	.2325
San Francisco	70%	76%	.2275
Seattle	75%	78%	.23

Price of 60% Ammonia Gelatin is $0.0125 per lb. higher than 40%

Glass; a Jobbers' list price per box, 14 x 20, as, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. *b* Discount from list, Apr. 1951; sales tax included, but 6% tax exemption not allowable for. *c* Single thickness. *f* Disc from Oct. 1950.

Explosives; * Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. *g* In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $9.00 per trip. *h* F.o.b. city per 100 lb. forcite, 40%. Forcite 60%, $21.75. *i* F.o.b. Beloeil (near Montreal).

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.175	$0.2075	$0.2275
W. of Miss. to Rocky Mtn. States, Fla. and Maine	.18 – .1875	.2125– .22	.2325– .24
Rocky Mtn. States	.18 – .1925	.2125– .22	.2325– .245
Pacific N. W. States	.1775– .19	.21 – .2225	.23 – .2425
Pacific S. W. States	.175 – .1825	.2075– .21	.2275– .2325

PILES, TIES F. O. B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail: Pine*	By Rail: Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.43	....
12-in.— 2-ft. from butt	6-in.	50 to 59-ft.	.46	....
12-in.— 2-ft. from butt	6-in.	60 to 69-ft.	.50	....
12-in.— 2-ft. from butt	6-in.	90 to 100-ft.	....	....
13-in.— 3-ft. from butt	5-in.	91 to 100-ft.	....	....
14-in.— 2-ft. from butt	6-in.	50 to 69-ft.	.50/.60	....
14-in.— 2-ft. from butt	6-in.	70 to 79-ft.	.70/.75	.85
14-in.— 2-ft. from butt	5-in.	80 to 85-ft.	.75/.85	.86
14-in.— 2-ft. from butt	5-in.	85 to 89-ft.	....	.92
14-in.— 2-ft. from butt	5-in.	90 to 100-ft.	....	.94

* Pine piling over 80-ft. available only in limited quantities.

RAILWAY TIES

Prices f.o.b. per tie for carload lots:		6"x8"x8' Untr.	6"x8"x8' Tr.	7"x9"x8'6" Untr.	7"x9"x8'6" Tr.
Boston	Oak	‡	....	....	....
	Pine	‡	....	....	....
New York	S. L. Sap Pine	$2.10	$3.90	$3.00	$5.00
	Mixed Oak	2.65	4.20	3.25	5.50
Birmingham	Hardwood	2.00	3.13*a*	2.68	4.16*a*
Chicago	Red Oak	....	4.00*a*	....	5.00*a*
Los Angeles	Douglas Fir	....	....	....	....
	Redwood	....	....	....	....
Philadelphia	Red Oak	2.15/2.33	3.10/3.13*a*	3.00/3.10	4.15/4.35*a*
St. Louis	White Oak	2.90	....	3.60	....
	Red Oak	2.80	3.45*a*	3.48	4.45*a*
	Sap Pine or Cypress	3.28*a*	....	4.20	....
San Francisco	Douglas Fir	2.31*e*	3.35*af*	3.03*bf*	4.40*eaf*
Montreal	Birch or Maple	..... *h*	..... *h*	..... *h*	..... *h*

Tr.— Treated; Untr.— Untreated. *a* Creosoted. *b* 7" x 9" x 8'. *e* Empty cell. *e* Green. *f* F.o.b. cars. *h* No constant price available. ‡ Not available.

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb	$6.00
Chlorine cylinders, liquid, per lb. f.o.b. works	.0875
Calcium chloride, 77–80%, flaked, 100-lb. paper bag, f.o.b. works, ton	25.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb	2.20
Soda ash, 58%, in paper bags, per 100 lb. dense	1.60
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.65
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	8.95

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE PARTITION — SCORED Per M. lots of 2,000 pieces or over, 3x12x12 in.	4x12x12 in.	8x12x12 in.	STRUCTURAL CLAY TILE — LOAD BEARING — SCORED Per M. lots of 2,000 pieces or over, 8x12x12 in.	10x12x12 in.	12x12x12 in.	BRICK Per M. in quantity Common backing	Straight hard	LIME Per ton, In paper, Carload lot, Hydrated finishing	Common hydrated	Pulverised, or lump
Atlanta	.....	.....	.....	.....	.....	.....	$27.78	$27.78	$19.00	$17.50	$17.50
Baltimore	$180.00	$191.00	$358.00	$406.00	$530.00	$605.00	37.00*kk*	42.00*kk*	30.00	20.60	....
Birmingham	118.00*p*	128.00*p*	236.00*p*	283.00*p*	.....	.....	23.50*ff*	28.00*gg*	26.37	17.10	....
Boston	191.65†	204.40†	383.25†	383.25†	.....	.....	33.50*ii*	36.50*ii*	30.00†	28.00†	.. *
Chicago	135.00	145.00	280.00	.....	.....	.....	21.00	23.00	30.80	26.00	....
Cincinnati	185.00*j*	195.00*j*	340.00*jdd*	.....	.....	.....	34.00*j*	46.00*j*	26.00*j*	24.25*j*	....
Cleveland	149.00**	156.00**	.....	.....	.....	.....	32.00	32.00	25.50	23.50	31.00*ee*
Dallas	.....	118.00	.....	.....	.....	.....	19.75	35.25	32.00	21.80	....
Denver	.....	.....	.....	.....	.....	.....	34.00	40.00	34.80*bb*	28.00*bb*	34.00*bb*
Detroit	118.18	126.08	236.40	.....	293.30	335.20	34.00*cc*	32.50*cc*	32.00	32.00	.....
Kansas City	115.50	122.50	245.00	245.00	303.50	367.00	26.00*o*	26.00*o*	30.50	24.50	27.00
Los Angeles	*r*	*r*	*r*	*r*	*r*	*r*	20.00‡	....	34.00	34.00	35.00
Minneapolis	171.50*p*	192.50*p*	386.00*p*	192.50*np*	.....	.....	32.00*np*	36.00	37.00*bbc*	28.00*bbc*	38.00*bbdle*
Montreal	150.00*nq*	162.50*nu*	300.00*nu*	.....	.....	.....	26.50	38.50	34.80	32.50	24.60*u*
New Orleans	170.00	170.00	310.00	.....	.....	.....	31.00	.....	.....	20.00	20.00
New York	121.60*kk*	129.70*kk*	178.30*kk*	194.60*knA*	.....	455.74	38.50	....	38.00	32.00	.....
Philadelphia	126.30	134.80	252.60	302.74	361.35	.....	29.00	32.00	36.00	21.50	....
Pittsburgh	112.00	117.00	189.00	216.00	279.00	317.00	32.00	42.00*y*	25.00	23.00	2.97*m*
St. Louis	136.00*cc*	156.00*cc*	226.00*cc*	307.50*cc*	345.00*cc*	.....	40.00*sl*	36.25*sl*	.85*aaa*	.65*aaa*	1.10*aaspee*
San Francisco	156.85*z*	177.10*z**	235.30*dda**	.....	.....	.....	37.00	....	21.35	26.35	2.62*m*
Seattle	175.00*cc*	190.00*cc*	.....	190.00*ccw*	.....	.....	39.00*s*	40.00*s*	37.50*ahh*	1.50*f*	3.90*mhh*

† F.o.b. yard Roxbury. *a* Smooth. *b* Per 50 lb. bags. *c* 6 x 12 x 12 in.-3 cell. *d* Pulverised hot. *e* 5%. 10th following month. *g* 5½ x 8 x 12. *h* F.o.b. trucks, job site N.Y.C. *i* F.o.b. warehouse only. *j* Truck load or over. *k* $1.00 discount. *l* Red face. *m* Per bbl., 180 lb. *n* 7⅞ x 7⅞ x 12. Speed title. *o* F.o.b. Buffalo. *p* Truck lots. *q* Provincial and Municipal tax extra. *r* Not used because of earthquake danger. *s* 2% discount for cash. *t* 5½ x 8 x 11½. *u* Tax exempt. *v* Sand lime. *w* 5 x 8 x 12. *y* Stacked. *z* Pebble lime price per 80 lb. sack. *aa* Price per sack. Lime not sold per ton. *bb* LCL. *cc* Truck delivery *dd* 6 x 12 x 12. *ee* Pebble lime. *ff* 80% common. *gg* Select. *hh* LCL. *ii* F.o.b. plant. *jj* Per 60 lb sack, no incr., ton price no longer quoted. **Only 1 plant producing, quotes on warehouse delivery, previous quotes were truck deliv. * F.o.b. Stockton. A. Subj. to incr. not in excess of 10%.

PAINT, ROOFING—F.O.B. CARLOAD LOTS

	RED LEAD Per 100 lb. in 600-lb. (Approx.) bbl. Dry *a*	WHITE LEAD Per 100 lb. in 100 lb. cases in oil *w*	READY-MIXED PAINT Per gal., drums Graphite *b*	Aluminum *c*	Ferric Oxide *d*	ROOFING SUPPLIES Carload lots f.o.b. factory Rolls, slate surfaced, 85–90 lb., per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating 386 lb. per gal.	Tar pitch 380 lb. bbl. per ton
Atlanta	$20.75	$31.025	$1.75	$2.70	$1.65	$2.06‡	$2.06‡	$2.06‡	$1.00‡	$36.00‡
Baltimore	20.50	30.65	2.65	4.10	3.22	2.50	4.17	4.17	.42	37.00
Birmingham	20.75	31.025	3.90	3.40	....	2.80	2.75	2.75	....	40.50*ee*
Boston	20.50	30.65	....	....	....	2.89*q*	2.79*o*	2.79*o*	.47	42.00
Chicago	20.50	30.65	...	....	....	2.73‡*u*	3.04‡*o*	3.04‡*o*	38.00‡*bbr*	43.00‡
Cincinnati	20.50	30.65	....	....	....	2.50	2.50	2.50	.42*y*	42.36
Cleveland	20.50	30.65	2.94*pqqA*	3.37*qqB*	2.80*C*	2.50*q*	2.50*o*	2.50*o*	.36*ff*	40.00*kk*
Dallas	20.75	31.40	....	4.05	....	3.50*q*	3.75*o*	4.35*o*	.36	46.00
Denver	21.00	31.15	3.07	5.15	2.87	3.25*o*	2.76*o*	2.76*o*	.47*ff*	42.00
Detroit	20.50	30.65	2.35	3.40	2.50	2.50	2.50*f*	2.50	.51	40.00
Kansas City	20.50	30.77	....	2.71	....	2.39	2.43*o*	2.43*o*	.313	48.00
Los Angeles	20.50	30.90	3.30	4.50	4.20	2.97	2.01*e*	*l*	.44	*l*
Minneapolis	20.50	28.55/30.77	....	....	....	2.50*idd*	2.50*idd*	2.50*idd*	.34*idd*	37.00*e*
Montreal	....	20.70	3.75*t*	4.20*t*	4.62*t*	3.80*t*	3.85*ff*	3.00*kk*	.44	3.15*kk*
New York	20.50	30.65	3.45*y*	....	....	2.50	2.50*o*	2.50*o*	.34*z*	37.00
Philadelphia	20.50	30.65	3.25	3.65	3.15	2.54	2.94	2.94	.37	26.00
Pittsburgh	20.50	30.65	2.45	2.55	2.20	2.90	2.90*o*	2.90*o*	.39	42.00
St. Louis	20.50	30.65	....	....	....	2.50	2.50*h*	2.50*h*	.37*y*	38.00
San Francisco	20.50	30.90	2.40	3.40	....	2.95	4.00*aa*	....	.49	....
Seattle	20.50	31.15	2.51*m*	2.67*m*	....	3.58*mqcc*	3.05*hmcc*	....	.59*mcc*	52.00*jmcc*

‡ Delivered. Note: Red lead in oil 50c higher than white lead in oil. *a* Red lead prices change frequently due to pig lead price changes. *b* U. S. War Dept. Spec. 3-49A. *c* ASTM Spec. D266-31. *d* 80% minimum ferric oxide. *e* 15 lb. *f* Per 432 sq. ft. *h* Per roll, 65 lb. *i* Net carload lot prices; Minneapolis and vicinity. *j* Asphalt pitch. *k* Per cwt. *l* Not used. *m* 1% discount for cash. *o* Per 60-lb. *p* 6-drum. *q* Per 90-lb. roll. *r* F.o.b. factory Chicago. *t* Federal tax included. *u* Per 90 lb. square. *v* Per ton. *w* Price to large paint contractors is $1.25 less. *x* Mineral surfaced. *y* 55-gallon container. *z* Drums. *aa* Approximate cost per 100 lbs. *bb* Roofers coating and cement. Price per ton. *cc* LCL. truck delivery. *dd* 2% cash discount. *ee* Asphalt, in 100 lb. package. *ff* 5-gal drums. *gg* F.o.b. factory. *hh* Incl. freight. *A.* TTTP 27. *B.* TTA 468A. *C.* TTP 31A.

SKILLED AND COMMON WAGE RATES—PER HOUR

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor Building	Common Labor Heavy Const.
Atlanta	$2.50	$2.00	$2.25	$2.25	$2.50	$2.50	$2.35	$1.05	$1.05
Baltimore	3.20*c*	2.42	2.80	2.60/2.80	2.50	2.75	2.50	1.38	1.38
Birmingham	2.75	2.125	2.35	1.975	2.30	2.50	2.50	1.10	1.20
Boston	2.888	2.475	2.75	2.80	2.97	2.75	2.695	1.815	1.815
Chicago	2.8254*A*	2.70*A*	2.75*A*	2.65*A*	2.865*An*	2.835*n*	2.70	2.03*mA*	2.03*mA*
Cincinnati	2.84	2.475	2.665	1.825/2.85	2.67	2.70	2.64	1.65	1.65
Cleveland	2.70*i*	2.825*e*	2.825	2.70	2.825	2.825	2.825	2.10	1.85
Dallas	3.4375*t*	2.3375	2.50	2.475	3.125*t*	2.6125	2.6125	1.20	1.35
Denver	3.00	2.35	2.30	2.48	3.00	2.65	2.65	1.575	1.575
Detroit	2.85	2.60	2.85*m*	2.80	2.964*l*	2.85	2.75*m*	1.90*t*	1.90*t*
Kansas City	2.86	2.365	2.53	2.365/2.61	3.025	2.55	2.625	1.73	1.73
Los Angeles	2.75*ll*	2.35	2.50	2.30	3.125	2.625	2.625	1.75	1.75
Minneapolis	2.65	2.33	2.50	2.28	2.75	2.645*n*	2.55	1.67	1.67
New Orleans	2.70	2.06	2.45	2.325	2.375	2.50	2.45	1.10	1.10
New York	3.548*r*	3.096*o*	3.348*o*	3.348*o*	3.599*ar*	3.456*ao*	3.288*p*	1.90	1.90
Philadelphia	3.31*i*	2.65*A*	3.05*iA*	2.90	3.075*k*	3.03/3.283*u*	2.825*k*	1.51*A*	1.81*A*
Pittsburgh	3.00	2.75	2.75	2.825	2.75	2.75	2.80	1.70	1.70
St. Louis	3.09*r*	2.70*h*	2.75	2.76	2.875	2.805*r*	2.625	1.77	1.77/1.80
San Francisco	3.256	2.45	2.70	2.41	3.125*n*	2.75	2.75	1.70	1.70
Seattle	3.30	2.42	2.57	2.50	3.00	2.65	2.75	1.97	1.95
Montreal*	1.75	1.55	1.65	1.45	1.75	1.65	1.70	1.09	1.03

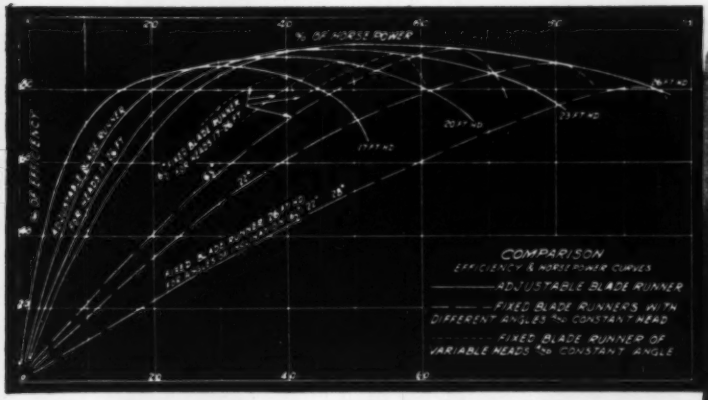
a 6 hr. day. *b* 7 hr. day. *c* Incl. 3% vacation stamp fund for bricklayers; 2% for electricians. * Cost of living bonus now included in basic wage. *e* Includes 5¢ per hr. tool replacement. † Plus $5.00 daily bonus. *h* $2.37 homes and housing + 5¢ vacation fund. *i* Incl. 2% welfare. *j* Incl. 9¢/hr. welfare. *k* Incl 7½ ¢ /hr. welfare fund. *l* Incl. 4% vacation fund. *m* Incl. 5¢/hr. welfare ins. fund. *n* Incl. 6¢/hr. welfare fund. *o* Incl. 3% welfare fund. *p* Incl. 3% welfare fund and 3% pension fund. *r* Incl. 3% welfare fund and 20¢ pension fund. *s* Incl. 4% welfare and pension fund and 4% vacation fund. *u* Incl. 1% welfare fund. *t* Still negotiating. *v* Incl. 10¢ welfare fund. *A* Subject to W.S.B. approval. *B* Some contrs. paying 3.00 unofficially.

MEXICO CITY PRICES

In Pesos, F.o.b. City		July '51	Aug.'51
Common Wages—Building (8 hr. day)	av. per hr.	68*	68*
Common Wages—Heavy Const. (8 hr. day)	av. per hr.	75*	75*
Skilled Labor Wages			
Carpenters (8 hr. day)	av. per hr.	1.88*	1.88*
Bricklayers (8 hr. day)	av. per hr.	1.88*	1.88*
Struct. Iron Workers (8 hr. day)	av. per hr.	1.05*	1.25*
Struct. Steel Shapes			
3"-15" x 12 meters	per metric ton	1,111.01	1111.01
Reinf. Steel, Corr. Rods			
½" x 11 meters	per ton	1,261.51	1261.51
⅝" x 11 meters	per ton	1,251.13	1251.13
¾" x 11 meters	per ton	1,240.75	1240.75
⅞" x 11 meters	per ton	1,230.37	1230.37
1" x 11 meters	per ton	1,230.37	1230.37
1" x 11 meters	per ton	1,230.37	1230.37
Gravel truck load of 3½ cu. meters			
Blue Gravel	per tr. load	42.00	45.00
Rose Gravel	per tr. load	38.00	40.00
Cement, Std. Port. (Toltica)	per ton	130.00	130.00
Lumber			
Mex. Sacred Fir (Oyamel)	per M ft.	850.00	800.00
1st Class Pine	per M ft.	1200.00	1200.00
2nd Class Pine	per M ft.	950.00	950.00

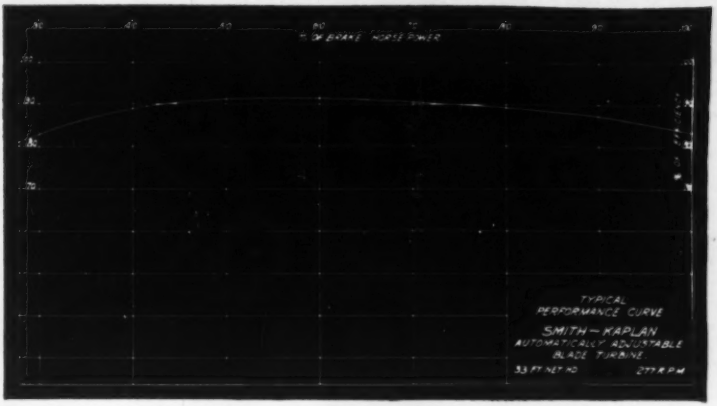
* Increase by 1/6th—work 6 days, paid for 7 days.

ENR Skilled Average: (Bricklayers, Carpenters, Ironworkers) $2.701. **ENR Common Average:** $1.637.


% OF HORSE POWER
COMPARISON
EFFICIENCY & HORSE POWER CURVES
ADJUSTABLE BLADE RUNNER
FIXED BLADE RUNNERS WITH DIFFERENT ANGLES AND CONSTANT HEAD
FIXED BLADE RUNNER OF VARIABLE HEADS AND CONSTANT ANGLE

"Actions Speak Louder than Words"

The SMITH-KAPLAN Turbine



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POWER by SMITH

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager — *J. A. MAHONEY, Reports* — *M. R. ROESSLER, Statistics*

NEW ENGLAND

BIDS ASKED—BUILDINGS

Mass., Fairhaven—SCHOOL—B.A. 9/12—Town, 2 story, brick Oxford School addn. Plans deposit $50. CD 1/27/50.

Mass., Roxbury—BUILDING—B.A. 9/12—City, Pub. Wks. Dpt., City Hall Annex, Boston, building for Welfare Dpt., 1487 Tremont St., $850,000, John M. Gray, 175 High St., Boston, archt. CD 5/22 under Boston, Mass.

Mass., Lynn—SCHOOLS—B.A. 9/25—City, School Dpt., 42 Franklin St., 2 story, brick elementary school, Ward 7, $580,000; elementary school, Essex St., Silver Lake Dist. Plans deposit $75 each, M. A. Dyer Co., 24 School St., Boston, archts. CD 12/28/50.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

† **Md., Andrews Air Force Base**—READINESS BLDG.—B.A. 9/11—U. S. Eng., First and Douglas Sts., N. W., Wash. 25, D. C., readiness bldg., ENG 49-080-52-14 (8).

Pa., Gettysburg—B.A. 9/11—Gettysburg Municipal Auth., 141 Baltimore St., Contr. 1, general construction; Contr. 2, plumbing work; Contr. 3, heating work; Contr. 4, electrical work, sewage treatment plant addns. Plans deposit $15 Contr. 1, Plans deposit $10 each of others. Gannett, Fleming, Corddry & Carpenter, Inc., 600 N. Second St., Harrisburg, Pa., engr. CD 9/10/49.

N. Y., Wanaque—B.A. 9/12—North Jersey Dist. Water Supply Comm., Wanaque Headworks, Ramapo Pumping Station Contr. 57, pumps, motors, piping, etc.; Contr. 58, electrical work; Contr. 63, heating and ventilating work; Contr. 64, plumbing and drainage work; Contr. 65, general engineering construction; Contr. 69 engineering steel and misc. steel and metal; Ramapo Treatment Plant, Contr. 72, mechanical equip.; Contr. 73, electrical work; Contr. 74, heating and ventilating work; Contr. 75, plumbing and drainage work. Plans deposit $35 pumping station, Contr. 56, general construction work; Contr. 66, steel and misc. metal work; treatment plant, Contr. 70, general construction work, Contr. 71, misc. metal work. Plans deposit $35. CD 9/28/45.

N. J., Camden—B.A. 9/12—City, Purch. Bd., at office Mayor, City Hall, main sewage treatment plant Primary Treatment; general construction, Contr. 5. Plans deposit $35. Havens & Emerson, Woolworth Bldg., 233 Broadway, New York, 7, N. Y., engrs. Bids Aug. 1 rejected; adv. ENR 8/23. CD 8/6, under LB.

▲ **New Jersey and Pennsylvania**—B.A. 9/14—Delaware River Joint Toll Bridge Comn., Room 526 Broad St. Bank Bldg., Trenton, N. J.

Sussex and Pike Counties—constr. sub-structure for new 4-lane divided-center bridge across Delaware River from Milford, Pike Co., Pa. to Montague, Sussex Co., N. J., $2,000,000.

Warren and Monroe Counties—constr. sub-structure for new 4-lane center-divided bridge across Delaware River from Delaware Water Gap, Monroe Co., Pa. to Dunnfield, Warren Co., N. J., $10,000,000.

Warren and Northampton Counties—constr. sub-structure for new 4-lane, divided-center bridge across Delaware River from Portland, Northampton Co., Pa. to Columbia, Warren Co., N. J., $3,000,000. Plans deposit $10 each.

BIDS ASKED—BUILDINGS

N. J., Clinton—CLOSE CUSTODY UNIT—B.A. 9/11—At office Fred. V. Ferber, dir., Div. Purchase & Property, State House, W. State St., Trenton, Zone 7, general work, structural steel and misc. iron work, plumbing, heating and ventilating and electrical work in connection with Close Custody Unit at Reformatory for Women. Plans deposit $25; adv. ENR 8/23.

Pa., Erie—HOSPITAL—B.A. 9/11—Bd. Erie Co. Comrs., Court House, 3 story bsmnt, brick, steel T. B. Hospital, $800,000. Meyers & Kreider, Commerce Bldg., Erie, archts. CD 8/10.

N. Y., Willard—KITCHEN—B.A. 9/12—Bureau Contracts and Accounts, Albany, kitchen bldg. and continued treatment bldg. at Willard State Hospital. Plans deposit $30. CD 8/7/46.

Pa., State College—INN ADDNS., etc.—Bids Asked—Penn State College, State College, Nittany Lion Inn, addns., alterations, $750,000. Hart Jerman & Assocs., 247 Park Ave., New York, N. Y., archts.

BUILDINGS

LOW BIDS AND CONTRACTS

Laub Constr. Co., 1518 Walnut St., Phila., Pa., LB $790,000, city HALL and court House, alterations and addns., CAMDEN, N. J. Camden Co., Bd. Freeholders, City Hall, Camden, N. J. Bids Aug. 16. CD 8/6.

▲ **Penn Valley Constr. Co.**, Morrisville, Pa., Separate Contracts, $1,050,000, RESIDENTIAL DEVELOPMENT Langhorne Rd., etc., LANGHORNE, PA. William Roberts, c/o owner, archt.

▲ **North Allegheny Joint Auth.**, R.D. 7, West View, Pa., rejected bids July 9, 1 story irregular shape, brick glass Junior Senior HIGH SCHOOL. McCandless Twp. L.B. $1,994,000. est. $1,500,000. PITTSBURGH, PA. CD 8/1, under LB.

Donald R. Wyeth, 469 3 St., Washington, Pa., LB $121,928. est. $150,000. 1 story 150x160 ft., brick, block, steel frame, WAREHOUSE, Chartiers Twp., WASHINGTON, PA., Washington Grocers Assoc., Inc., Washington, Pa. CD 4/5.

† **Wesley Freeman, Inc.**, 1700 Friendship St., Baltimore Md., LB $191,500. RADIOLOGICAL COLD LABORATORY, Army Chemical Center, EDGEWOOD, MD. U. S. Eng., 24 St. and Maryland Ave., Baltimore, Md. Bids Aug. 14. CD 8/1.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† **Va., Norfolk**—TEST CELLS—B.A. 9/11—Pub. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Zone 11, turbo-prop engine test cells at Naval Air Station, NOY 28612, Spec. 30264. Plans deposit $25.

† **Tenn., Knoxville**—READINESS HANGAR—B.A. 9/11—U. S. Eng., 303 U. S. Court Court House, Nashville Zone 1, approx. 130x230 ft., steel, concrete readiness hangar at McGhee-Tyson Air Force Base, Serial No. Eng 40-058-52-5. Plans deposit $15.

Ga., College Park—B.A. 9/12—City, water distr. sys. addns. Approx. $50,000. Plans deposit $20. Wiedeman & Singleton, P.O. Box 1878, Atlanta, Ga., engrs.

† **Kentucky**—B.A. 9/12—U. S. Eng., 830 W. Broadway, Louisville, Zone 3, replacement sect. 8 Boule Weir with concrete fixed weir, Dam 441, CIVENG 15-029-52-14.

Ky., Danville—B.A. 9/12—City, City Hall, WW imprvs. Plans deposit $20, J. Stephen Watkins, 251 E. High St., Lexington, consult. engr.

† **Ga., Savannah**—ROADS—B.A. 9/15—U. S. Eng., Post Office Bldg., construct access roads Hunter Air Force Base. Eng. 09-133-52-14. Plans deposit $10.

Tenn., Memphis—B.A. 9/15—City Comrs., City Hall, imprv. Popular St. from Anlon Viaduct to White Station, curbs, gutter, 4 lanes, $800,000. Wm. Fowlwer, city engr.

Tenn., Tullahoma—B.A. 9/17—City, city recorder City Hall, water main extens., trunk sewers, Contract 1, feeder main; Contract 2, Bel-Aire distribution system; Contract 3, Forrest Parl Watermain; Contract 4, Rock Creek Relief Sewer; Contract 5, Forrest Park Trunk Sewer; Contract 6, Bel-Aire Trunk Sewer; Contract 7, Bel-Aire Sewers. Plans deposit $10. Greeley & Hansen, 220 S. State St., Chicago, 4, Ill., engrs. CD 5/3 adv ENR 9/6.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public work $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects invioved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

Ga., Cave Springs—SWIMMING POOL—B.A. 9/18—Georgia State Bd. Educ., c/o Bothwell & Nash, archts., 206 Roswell St., Marietta, swimminggpool, recreation bldg. at Georgia School for Deaf.

† **Mississippi**—B.A. 9/18—U. S. Eng., P. O. Box 60, Vicksburg, approx. 789,000 cu. yd. earthwork on East Bank of Mississippi River in Issaquena Co., CIVENG 22-052-52-20.

La., Krotz Springs—B.A. 9/19—C. S. Kirkpatrick, ch. engr., New Orleans, Texas & Mexico Railway Co., 204 Union Station, Houston, Tex., constr. compacted portion of embankment in high level crossing over the West Atchafalaya Floodway, adv. ENR 9/6.

BIDS ASKED—BUILDINGS

N. C., Hendersonville—HOSPITAL—B.A. 9/14—Margaret R. Pardee Hospital c/o Six Assocs. Inc., archt., Hendersonville Rd., Asheville, hospital, Approx. $400,000. CD 7/24.

▲ **Ala., Birmingham**—HOSPITAL—B.A. About 10/1—Birmingham Baptist Assn., Education Bldg., hospital addn., Approx. $1,000,000. Lawrence S. Whitten, Brown-Mark Bldg., Birmingham, archt. CD 5/1.

▲ **Ala., Gantt**—GENERATING PLANT—B.A. About 10/1—Alabama Rural Electric Co-operative, Anadalusia, electric power generating plant. $3,200,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Blythe Bros. Co., 2911 Hutchinson Ave., Charlotte, N. C. CA $623,147. McCombers Ditch drain outfall Proj. DRA B.S. 31-1-51, WILMINGTON, N. C. City, City Hall, Wilmington, N. C. CD 8/9 under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

The Austin Co., M & M Bldg., Houston, Tex., CA $700,000. constr. special BUILDING for housing paper box machinery, PORT ST. JOE, FLA. St. Joe Paper Co., Port St. Joe, Fla. Harry Saunders, c/o owner, engr. Awarded Aug. 18.

MIDDLE WEST

BIDS ASKED—BUILDINGS

Ill., Dixon—POWER PLANT—Bids Asked—Public Service Co. of Northern Illinois, 72 W. Adams St., Chicago, 3, Ill., power plant addn., $800,000. Sargent & Lundy, 140 S. Dearborn St., Chicago, 3, Ill., engrs.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **McHugh-Healey-Boyle**, c/o 6449 S. Park Ave., Chicago, Ill., LB, $9,879,138, 7 sections in city:

▲ **Keeley Bros. Contg. Co.**, 4211 State St., East St. Louis, Ill., LB, $1,521,585, Sec. 5, 8, 180,000 ft. 6-in. to 36-in. sewers Edgemont, Oak Park and Rush City, of relief and sanitary sewers, EAST ST. LOUIS ILL. City of East St. Louis, Alvin G. Field, mayor, City Hall, Main St. and Missouri Ave., East St. Louis, Ill. Bids Aug. 20. CD 8/10.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Troy W. Maschmeyer Co.**, 27711 Groesbeck St., Roseville, Mich. Owner Builds. $1,300,000. 140 25x40 ft. HOUSES, Eleven Mile Rd., ROSEVILLE, MICH.

Smith & Andrews Constr. Co., 14290 Meyers Rd., Detroit, Mich. CA $450,000. brick, steel Madison High SCHOOL addn., alterations, ROYAL OAK, MICH. Bd. Educ., Madison Dist. 10, A. V. Frasier, secy. Royal Oak, Mich. Bids July 19. CD 7/9.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **Colorado**—VALVES—B.A. 9/13—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, furnishing two 84 in. butterly valves with operating units and handling equipment for Colorado-Big Thompson Proj., Spec. DS 3518; adv. ENR 8/16.

† **Wyoming**—CABLE LINE—B.A. 9/13—Bureau Reclamation, Dpt. Interior, Casper, construct Seminoe-Kortes control Cable line, Spec. 703C-214, Missouri River Basin Proj.

† **Colorado**—B.A. About 9/14—U. S. Eng., P.O. Box 1538, Albuquerque, N. M., emergency bank protection for Arkansas River, Pueblo, on right bank of the Arkansas River, Serial No. CIVENG 29-005-52-3. CD 4/21/44.

† **Colorado**—CIRCUIT BREAKERS, etc.—B.A. 9/18—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, furnish., del. f.o.b. cars shipping point or f.o.b. cars Walt Siding, Colo. carload lots, Loveland, Colo., less than carloads lots, circuit breakers, switches, reactors, transformers for

Flatiron Power and Pumping Plant Switchyard and the Pole Hill Power Plant Switchyard, Colorado-Big Thompson Proj. Spec. DS 3513. L. N. McClellan, ch. engr.

† **South Dakota**—SUB STATIONS—B.A. 9/18—Bureau Reclamation Dpt. Interior, Huron, constr. Winner Substation, DC-3515; constr. Bonesteel substation, DC-3516; constr. Gregory Substation, DC 3517, all Missouri River Basin Proj., Transmission Div. L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

BIDS ASKED—BUILDING

Kan., Kansas City—POWER PLANT—B.A. 9/12—Bd. Pub. Utilities, City Hall, 40,000 sq. ft. condenser for Kaw River Power Plant, 20 and Kansas Sts., Burns & McDonnell, 95 and Troost Aves., Kansas City, Mo., engrs. CD 1/12.

Minn., Lakefield—SCHOOL—B.A. 9/13—Bd. Educ., L. Trosin, clk., 1 story, bsmnt., 172x160 ft., L-shape school addn. $325,000. Plans deposit $10, H. H. Swanson, 500 Sexton Bldg., Minneapolis, archt. CD 1/3.

Colo., Julesburg—SCHOOL—B.A. 9/14—School Dist. No. 53, Sedgwick Co., 1 story grade school. $300,000. Henry A. Koch, 406 Chamber of Commerce Bldg., Denver, Colo., engr. and archt. CD 5/29.

† **Oregon**—SUB-STATIONS—B.A. 9/14—U. S. Eng., Bldg. 602 City-County Airport, Walla Walla, Wash., powerhouse unit sub-stations, Units 1 to 8, McNary Dam, Inv. No. CIVENG 45-165-52-2. Extended date. CD 7/11.

† **N. M., Los Alamos**—SERVICE AREA—B.A. 9/18—U. S. Atomic Energy Comn., Contract Div., Los Alamos, construct service area, Inv. No. 291-52-2. $825,000-$925,000. Plans deposit $50. CD 7/18.

Tex., San Antonio—SCHOOL—Bids Asked—Harlandale Independent School Dist., W. B. Spivey, pres., W. Huff Ave., hollow tile, concrete high school, $950,000. Plans deposit $25, Adams & Adams, Box 283, Terrell Wells, archts., W. E. Simpson, 945 Milam Bldg., engr. CD 3/26.

SOON LETS CONTRACT—BUILDINGS

▲ **Neb., Omaha**—PLANT—United States Cold Storage Corp., 2055 W. Pershing Rd., soon lets contract cold storage plant. $1,380,000. A. Epstein & Sons, 2011 W. Pershing Rd., Chicago, Ill., engrs. Extended date. CD 7/23.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Minnesota—State Hy. Dpt., 1246 University Ave., St. Paul.

J. W. Craig Co., 1814 N.E. California St., Minneapolis, Minn. LB $597,104. grading, grav. base, road-mixed bit. base surf. 15.1 mi., Pine Co.

Ballett Constr. Co., Crosby, Minn. LB $97,390. grading, paving 0.7 mi. in Fosston, Polk Co.

Okes Constr. Co., E. 1501 First National Bank Bldg., St. Paul, Minn. LB $463,662. grading, paving Polk Co.

received no bids Aug. 10. grav., base, road-mixed bit. surf. 7.3 mi., Hennepin Co. Bids Aug. 10. CD 7/26.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Hutchinson Metropolitan Hotel Co.**, Wiley Bldg., Hutchinson, Kan. cancelled bids Aug. 16. 87x165 ft. height, 142 ft. overall hotel, HUTCHINSON, KAN. est. $1,000,000. CD 7/26.

Smith Building Co., Inc., Box 796, Waco, Tex. CA $509,248. 1 and 2 story, brick veneer 38,000 sq. ft. SCHOOL, WACO, TEX. Waco Independent School Dist., Waco, Tex. Awarded Aug. 22. CD 8/22.

FAR WEST

Calif., Antioch—B.A. 9/17—City, City Hall, sanitary sewage works treatment plant, etc. Plans deposit $25. John S. Bates, city engr. CD 10/26/50.

† **California**—B.A. 9/18—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing and del. f.o.b. Cars at shipping point or f.o.b. cars at Goleta, Calif., one lot of energy dissipator, conduit liner, baffles, supports and misc. material for Tecolote Tunnel, Cachuma Proj., Spec. DS 3525. L. N. McClellan, ch. engr. CD 4/20/45.

† **Washington**—B.A. 9/18—Bureau Reclamation, Dpt. Interior, Epharats, constr. Babcock Pumping Plant and lateral W35.9, area W-8, West Canal laterals, Columbia Basin Proj. approx. 3 mi. southwest of Quincy, Spec. DC3514. L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch.; engr. adv. E. N. R. 8/16.

Calif., Pacific Grove—B.A. 9/19—City, City Hall grading, c.conc. curbs, etc. on Forest Ave., Light House, and Phoenix Aves., and Alder St., Plans deposit $10.

† **Washington**—B.A. 9/19—Bureau Reclamation, Dpt. Interior, Ephrata, Wash., constr. earthwork, lateral lining, pipe lines and structures, area P-1 lateral and sublaterals, Potholes East Canal Laterals, Columbia Basin Proj., Spec. DC-3528. N. L. McClellan, ch. engr. adv. ENR 9/6.

BIDS ASKED—BUILDINGS

▲ **Calif., Downey**—SCHOOL—B.A. 9/11—Downey High School Dist., 8521 E. Firestone St., North Downey Junior High School, $1,000,000. Extended date. Allison & Rible, 625 S. Westmoreland St., Los Angeles, Calif., engr. CD 8/20.

Calif., San Jose—COUNTY BLDG—B.A. 9/19—Santa Clara Co., Court House, San Jose, new county bldg.

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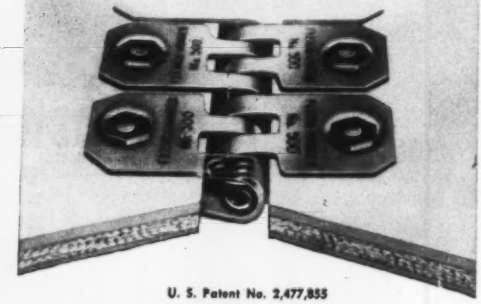

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$430,000. **Clark & Stromquist**, 321 Channing Ave., Palo Alto, Calif., archts. Extended date. CD 7/23.

BUILDINGS

LOW BIDS AND CONTRACTS

W. H. Wine Constr. Co., 2165 Plumas St., Reno, Nev., CA, **$614,239**, new HIGH SCHOOL, SPARKS, NEV. Sparks High School Dist., Sparks, Nev. Bids Aug. 13. CD 8/6.

L. E. Baldwin and Frank Dunham, 1103 N. 36 St., Seattle, 3, Wash., Day Labor, **$900,000**, 98 HOUSES, KENNEWICK, WASH. CD 8/20.

Ashby & Opperman, Box 127, Bakersfield, Calif., CA **$667,000**, est. $650,000, new Junior High SCHOOL at Center and Oswell Sts., BAKERSFIELD, CALIF. Bakersfield City School Dist., 1600 K St., Bakersfield, Calif. Bids Aug. 16. CD 8/7.

▲ **Wm. A. Simpson Constr. Co.**, 816 W. 5 St., Los Angeles, Calif., CA, **$1,000,000** Est. $900,000, 3 story, rein.-con. Michael T. Connell CLINICS, LOS ANGELES, CALIF. Childrens Hospital Society, 4614 Sunset Blvd., Los Angeles, Calif. CD 4/2.

Lewis C. Nelson & Sons, 3015 N. McCall St., Selma, Calif., LB, **$520,400**, elementary SCHOOL, PINEDALE, CALIF. Pinedale Elementary School Dist., Box 61, Pinedale, Calif. Bids Aug. 16. CD 7/25.

Heirschberg Constr. Co., 4122 W. Jefferson Blvd., Los Angeles, Calif., CA, **$548,463**, 1 story, frame, stucco intermediate high SCHOOL, REDONDO BEACH, CALIF. Redondo Beach City School Dist., 115 S. Francis St., Redondo Beach, Calif. Marsh, Smith & Powell, 208 W. 8 St., Los Angeles, archts.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **L. E. Baldwin, Inc.**, 1103 N. 36 St., Seattle, 3, Wash., LB. **$3,481,400**, airmen's Barracks, Elmendorf Air Force Base, Inv. No. 595-507-52-1, ALASKA. U. S. Eng., Flamingo Room, New Wash. Hotel, Seattle, 1, Wash. Bids Aug. 21. CD 7/26.

▲† **Southern Construction**, Fairbanks, Alaska, CA **$2,055,000**, water treatment facilities and sewage treatment plant, Inv. 51-100, Item 3, Eielson Air Force Base, ALASKA. U. S. Eng., Anchorage, Alaska. Bids July 10. CD 7/16, under LB.

▲† **C. F. Lytle, Green Constr. Co.** and **S. Birch & Sons**, Anchorage, Alaska, CA, **$2,311,526**, outside utilities 595-507-Inv. No. 51-115, Elmendorf Air Force Base, ALASKA. U. S. Eng., Anchorage, Alaska. Bids June 27. CD 7/12, under LB.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

▲ **Ont., Toronto**—B.A. 9/25—City, Dpt. of Wks., WW sect., 511 Richmond St., W., 16,000 ft. 36 in. watermain from Portland and Niagara Sts., to Bernard Ave. and Bedford Rd. $1,000,000. CD 8/16/44.

BIDS ASKED—BUILDINGS

Ont., Toronto—SCHOOL—B.A. 9/10—C. H. R. Fuller, bus. administrator, c/o Bd. Educ., 155 College St., Toronto, composite health school for crippled children at 430 Blythwood Rd., Approx. $950,000. F. C. Etherington, c/o owner, archt. CD 7/18.

FOREIGN

Australia—B.A. 9/18—At office Secy. State Rivers & Water Supply Comn., 100 Exhibition St., Melbourne, Part A, approx. 10,000,000 cu. yd. earthwork, misc. minor drainage works, road deviations and fencing; Part B regulating structures, incl. control equip., major cross-drainage works and some 50 road and railway bridges approx. 30,000 cu. yd. rein.-con. involved in these structures.

PROPOSED PROJECTS

WATER SUPPLY

Calif., Corcoran—City, City Hall, water sys. imprvs., $100,000.

O., Columbus—City, City Hall, 42 in. watermain from Goodale St. and Copeland Ave. to Cooke Rd. and Indianola Ave., booster pumping station near Lane Ave. and Olentangy River Rd., **$900,000**, Paul A. Uhlmann & Assoc., 1441 N. High St., consult. engrs. C. B. Cornell, city engr.

▲ **Okla., Lawton**—City, addnl. water mains, storage filter plant, and reservoir, **$1,000,000**, W. B. Hendrick, Lawton, consult. engr. CD 10/20/50.

Tex., Austin—Travis County Water Control & Imprvt. Dist. 4, voted **$225,000** bonds Aug. 11, WW sys., imprvs. and exten. CD 8/8.

▲ **Tex., Cisco**—City, bond election September 4, Proj. No. 1, water treatment plant, **$450,000**; Proj. 2, water supply sys., $550,000; Proj. 3, watermains, distr. lines, $250,000. Homer A. Hunter, 4707 Greenville St., Dallas, consult. engr. CD 8/15.

Tex., Mesquite—City, water treatment plant, **$125,000**, Homer A. Hunter, 4707 Greenville Ave., Dallas, consult. engr.

Wyo., Evanston—City, water mains and renewal of some present mains, **$100,000**. G. H. Chapman, city engr. CD 9/12/50.

SEWERS, WASTE DISPOSAL

Fla., Eustis—City, exten., imprv. sewerage sys., incl. line extens., interceptor, sewage pumping stations, modern sewage treatment plant to provide complete treatment of sewage, $500,000. Briley, Wild & Assoc., 8 N. Wild Olive St., P. O. Box 3052 Daytona Beach, consult. engrs. R. L. Maynad, Eustis, engr.

Ga., Vidalia—City, voted bonds, sanitary sewer imprvs. $150,000. CD 7/23.

Ind., Marion—City, Marion, new west side sewer to drain new industrial and residential area incl. large amount of 60-in. sewer, $450,000. Henry B. Steeg & Assocs., 2331 N. Meridian St., Indianapolis, Ind., consult engrs. CD 1/25/46.

Ind., Wabash—City, sewage treatment plant, $750,000; garbage grinder, $122,000. CD 1/26.

Kan., Pratt—City, sewers and sewerage plant, $135,000. Ediger Eng. Co., 252 Laura St., Wichita, consult. engr.

N. Y., Dunkirk—City, extension to sewer system and enlargement of sewage treatment plant, $120,000. CD 8/6/43.

Tex., Edinburg—City, sanitary sewer main extens. $500,000. Myers & Noyes, Nixon Bldg., Corpus Christi, consult. engrs.

Tex., Mesquite—City, sewage treatment plant, $175,000, Homer A. Hunter, 4707 Greenville Ave., Dallas, consult. engr.

Tex., San Antonio—City, sewage disposal plant, $800,000. W. N. Wells, Edinburg, consult. engr. CD 8/3.

Wash., Hoquiam—City, City Hall, storm sewers from Beacon Hill to waterfront, 16 to Myrtle Sts. $335,000.

Wis., Eau Claire—City, sewage treatment plant, $475,000 S. P. Hall Eng. Co., 128 Graham Ave., Eau Claire, consult. engr.

Wis., Gresham—Village, sewage treatment plant and sewers, $160,000. Foth & Porath, Inc., 409 E. Walnut St. Green Bay, consult. engr.

Wis., Mosinee—City, sewage treatment plant, $250,000 McMahon Eng. Co., Menasha, consult. engr.

BRIDGES

▲ **Tenn., Memphis**—City, Comrs., City Hall, underpass on Crump Blvd., beneath I. C. R.R. tracks between S. Main and Florida St., $1,500,000. Frank Busse, Shrine Bldg., Memphis, Tenn., consult. engr.

STREETS AND ROADS

N. Y., Granby—Town, 14.1 mi. roads, $105,785.

N. Y., Greenville—Town, 18.3 mi. roads, $128,100.

N. Y., Hannibal—Town, 21.05 mi. roads, $158,212.

N. Y., Mexico—Town, 25.8 mi. roads, $215,700.

N. Y., Richland—Town, 31.2 mi. roads $230,000.

N. Y., Schroeppel—Town, 20.1 mi. roads, $136,200.

N. Y., Wallkill—Town, 19.3 mi. roads, $135,000.

N. Y., Warwick—Town, 21.02 mi. roads, $147,140.

▲ **Washington**—State Hy. Dpt., Olympia.

Clark, Cowlitz and Lewis Counties—wid'n., Primary State Hy. 1, between Vancouver and Centralia, $7,000,000. W. A. Bugge, state hy. dir.

Man., Winnipeg—Municipality, wid'n. and paving Broadway from Main St. to Osborne Ave. $125,000. W. D. Hurst, city engr.

▲ **Ont., Hamilton**—City, J. F. Berry, city clk., City Hall, Project abandoned, Mountain Access road tunnel from city to Hamilton Mountain, $1,875,000. Proctor, Redfern & Laughlin, 11 Jordan St., Toronto, Ont., consult. engrs. CD 3/19.

EARTHWORK, WATERWAYS

Tex., Anahuac—Chambers-Liberty County Navigation Dist. Anahuac, 35,000 acre ft. water reservoir on Turtle Bay, incl. 100 mi. long open canal $700,000.

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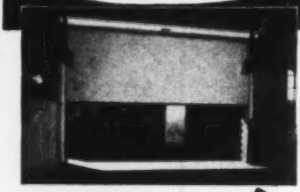

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AIRPORTS

Kan., Kansas City—AIRPORT—City and Fairfax Drainage Dist., Kansas City, airport imprvs. incl. repair and reconstruct storm sewer drainage sys., at Fairfax municipal Airport. **$391,000.** Sverdrup & Parcel, Syndicate Trust Bldg., St. Louis, Mo., consult. engrs. CD 3/18/48.

▲ **N. H., Concord**—FACILITIES—City, Mayor's Office, City Hall, facilities enlargement municipal airport, runway, taxiway exten., **$414,000**; aircraft parking **$200,000**; aircraft fuel storage, **$74,000**; crash truck station, **$27,000**; hangar, **$676,000**; utilities, **$142,000**; squadron warehouse, **$100,000**; motor service shop, **$52,000.** CD 1/8/45.

LATIN AMERICA

▲ **Mexico, Chilpancingo**—Syndicate, c/o State of Guerrero, Gov. Alexandro Gomez, Chilpancingo, plans iron ore reduction steel mill, **$5,000,000**; railway lines between mines and steel mill, **$250,000**; port construction **$500,000.**

Mexico, Ciudad Victoria—State Govt. Palacio del Estado, C. Viacotir, Tam., plans 3 small irrigation dams **$215,000.** Manuel Meloy N Maza Palacio del Estado, C. Vitoria, c/o owner, engr.

▲ **Mexico, Ensende**—Sria. de La Marina, Mexico City, plans breakwaters, **$1,150,000.**

Mexico, Mexico City—Sindicato de Musjcos (Musicians Union) Juan J. Osorbo, secy. San Ildefonso, 42, Mexico City auditorium **$300,000.**

Mexico, Mexico City—Industrieas Unidas S. A. Calle Oriente, 171, No. 398, plans electric interrupters factory, **$300,000.**

Mexico, San Andres Atoto—Calec Mills de Mexico, S. A. Sand Adreas Atoto, plans wool rug-carpet factory, **$300,000.**

▲ **Mexico, Santa Rosa**—Sria. de Recurosos Hidraulicos, P. de la Reforma, 69, Mexico City, 720,000 h.p. electric power plant, **$500,000.** Antonio L. Rondriguez, c/o owner, engr.

PUBLIC BUILDINGS

▲ **Ark., Jonesboro**—POWER PLANT, etc.—City Neal B. Thayer, mgr., City Water and Light Plant, Jonesboro, power plant addn., incl. 7500 kw unit with single outdoor boiler and structure housing the turbo-generator and controls, **$1,000,000-$1,100,000.** Burns & McDonnell Eng. Co., 95 and Troost Sts., Kansas City, Mo., consult. engrs. CD 7/18.

▲ **Calif., Chico**—SCHOOL—Chico City Elementary & High School Dist., Chico, plans by Lawrence G. Thomson, 125 W. Third St., Junior High School, **$1,000,000.** CD 12/8/50.

Calif., Kerman—SCHOOL—Kerman Elementary School Dist., 4666 Madison St., Fresno, plans by David Horn and Marshall Mortland, 1244 O St., Fresno, Elementary School **$419,000.** CD 8/1/45.

Calif., Santa Maria — SCHOOL addns. — Santa Maria School Dist., Santa Maria, plans by Daniel, Mann, Johnson and Mendenshall, 672 S. Lafayette Park Pl., Los Angeles, Cook St., Miller St., and Fairlawn School addns., **$343,000.** CD 2/20.

Conn., Farmington—SCHOOL ADDN.—Town, Bd. Educ., plans by Carl J. Malmfeldt Assoc., 36 Pearl St., Hartford Junior High School addn., **$500,000.** CD 10/2/50.

Conn., Hamden—SCHOOL—Town Bd. Educ., Town Hall, plans by Henry Schrauf Kelly, 282 York St., New Haven, Dunbar Hill School addn., northwest part of town. **$350,000.**

Ind., Pendleton—DORMITORY—State, P. Wks. and Supply Div., W. R. Mybeck, dir., State House, Indianapolis, plans by L. Crosby Bernard, 7241 Forest Ave., Hammond, 1 and 2 story 42x229 ft., dormitory with four projections, 39x10 ft., at State Reformatory, **$400,000.**

▲† **Md., Baltimore**—SIGNAL CORP DEPOT—U. S. Eng., 24 and Maryland Ave., Baltimore, Zone 18, plans by Turpin, Wachter & Assoc., archt. and engrs., 1004 N. Charles St., rehabilitation and alterations to Curtis-Caproni and Obrecht bldgs., Baltimore Signal Corp. Depot, Harbor Field, **$1,000,000.**

Mass., Chelmsford—SCHOOL—Town, Supt. Schools, plans by S. W. Haynes & Assoc., 330 Main St., Fitchburg, elementary school. Groton Rd. **$600,000.** CD 9/14.

▲ **Mass., Everett**—HOUSING—Everett Housing Auth., 48 E. Elm St., 125 housing units, Coburn Estate, **$1,200,000.**

Mass., Lynnfield—SCHOOL—Town, School Bldg. Comn., Town Hall, plans by Howard L. Rich and Herman F. Tucker, 45 Newbury St., Boston, Junior and Senior High School, **$700,000.**

Mass., Lynnfield—HIGH SCHOOL—Town School Bldg. Comn., Town Hall, Junior and Senior High School. $400,000.

Mass., Natick—HIGH SCHOOL—Town, Supt. Schools, plans by Coolidge, Shepley & Bulfinch, 1 Court St., Boston, Senior High School. **$450,000.**

Mich., Indian River—HIGH SCHOOL—Indian River Twp. Bd. Educ., Indian River, brick masonry grade and rural high school. **$350,000.**

Minn., St. Louis Park—SCHOOL—Bd. Educ., V. S. Formo, clk., plans by Haxby, Bissell & Belair, 1111 Nicollet Ave., Minneapolis, high school addn., alterations to present bldg., **$575,000.** CD 7/10.

Mo., Jefferson City—OFFICE—Missouri Bd. of Pub. Bldgs., c/o Gov. Forrest Smith, Capitol, plans by Marcel Boulicault, Ambassador Bldg., 411 N. 7 St., St. Louis, Zone 1, 2 story bsmnt., brick, rein.-con. office bldg. to house State Div. of Employment Security. $350,000.

Nebr. Omaha—PSYCHIATRIC UNIT—State Bd. Control, Lincoln, psychiatric unit at University of Nebraska Medical College, $350,000.

▲ **N. Y., New York**—HOUSING—New York City Housing Auth., 63 Park Row, New York, Zone 7, N. Y., plans by Brown & Guenther, 1860 Broadway, New York, Zone 23, Jefferson Houses—18 buildings incl. 1,495 families on tract bounded by First Ave., Third Ave., 112 and 115 Sts., $20,492,000. CD 3/31/48.

O., North Baltimore—SCHOOL—Bd. Educ., imprv. present school with library, music, industrial arts and home economics rooms, etc. $495,000.

▲ **Tex., Big Spring**—COURT HOUSE—Howard Co., Court House, defeated $1,000,000 bonds, court house. CD 5/16.

▲ **Tex., Edinburg**—COURT HOUSE—Hidalgo County, defeated $1,500,000 bonds, Court House, R. Newell, Waters, Weslaco, consult. engr. CD 8/17.

▲ **Tex., Houston**—PLANT—Navigation Dist., Wharf 3, Ship Channel, addnl. inbound bulk cargo handling plant, $1,500,000, Lockwood & Andrews, Union National Bank Bldg., consult. engrs. CD 8/7.

▲ **Tex., Longview** — SCHOOL — Longview Independent School Dist., plans by Wyatt C. Hedrick, 904 Fort Worth Ave., Dallas, school, $1,900,000. CD 10/28/48.

Tex., Mathis—SCHOOL—Mathis Independent School Dist., voted $400,000 bonds Aug. 23, school, E. Kellner, 406 Austin Hy., San Antonio, archt. CD 8/17.

Tex., Palestine—SCHOOLS—Palestine Independent School Dist., elementary school and remodeling school, $325,000; Negro High School, $300,000.

▲ **Tex., San Antonio**—SCHOOLS—San Antonio Independent School Dist., Lavaca and Matagorda Sts., plans by Phelps & DeWees & Simmons, 1501-6 Major Bldg., masonry elementary school on Hillcrest, west of St. Marys University, $300,000. masonry elementary school, area of Carvajal and Storm Schools, $325,000; masonry junior school northwest sect. of city, $700,000; Carvajal Junior School, $800,000; elementary school southwest sect. of city, $325,000; elementary school northern sect. of city, $325,000; junior school in area Hot Wells-Highland Hills, $700,000; elementary school on Old Seguin Rd. northwest of Wheatley Hy., $300,000; CD 10/30/46. Sydney Lanier High School shops, $150,000. CD 11/7/45. Brackenridge-Technical High School, imprvs., $300,000; Technical School vocational shop expansion, $150,000. CD 6/23/50.

Tex., Sinton—MUNICIPAL BLDG.—City, Frank Cleveland, mayor, voted $300,000 bonds, municipal bldg. CD 8/3.

Wash., Seattle—SCHOOL—Shoreline School Dist., 412 N. 137 St., and Roosevelt Way, bond election Sept. 22, 2 story rein.-con. Woodrow Wilson Junior High School, $700,000. Mallis & DeHart, Lyon Bldg., Seattle, archts. CD 7/16.

Wash., Washougal—SCHOOL—School Dist. 112, Washougal, Plans by Freeman, Hayslip & Tuft, Postal Bldg., Portland, Ore., elementary school. $300,000.

▲ **Wis., Oshkosh**—SCHOOLS—Bd. Educ., plans by Perkins & Wills, 309 Jackson Blvd. Chicago, Zone 6, high school and several grade schools, $1,200,000. CD 9/18/46.

Alta., Edmonton—ADMINISTRATION OFFICES—Alberta Dpt. P. Wks., Parliament, Bldgs., administration offices at Oliver Institute. $400,000.

Man., Souris—HOSPITAL—Hospital Dist. Bd., Souris, plans by Moody & Moore, 295 Broadway, Winnipeg, 30-bed hospital, $375,000. CD 10/27/50.

Ont., Seaforth—SCHOOL—Public School Bd., Seaforth, plans by Shore & Moffat, 79 Queen St., E, Toronto, Ont., school. Approx. $300,000.

▲ **Ont., Sudbury**—HOSPITAL—Sudbury Memorial Hospital Bd., Sudbury, plans by Chester C. Woods, 12 Richmond St., E., Toronto, 4 story bsmnt., 220x270 ft., rein.-con. T-shaped hospital, $1,500,000. CD 3/28/45.

Que., Aylmer—WAREHOUSE—Province of Quebec, Quebec City, warehouse to house trucks and hy. equipment, $150,000.

COMMERCIAL BUILDINGS

Calif., Redwood City—SHOPPING CENTER—James A. Arnott, building and sub-divider, 202 Atherton Ave., Atherton and Glen O. Smallcomb, 100 California Dr., Burlingame, shopping center at 1954 El Camino Real, near Five Points, $300,000.

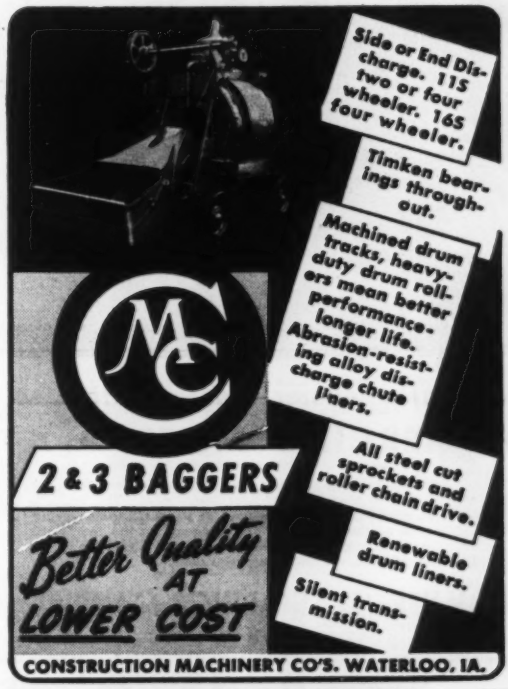
Calif., San Francisco — CHURCH — Temple Methodist Church, Rev. R. Orman Roberts, Van Ness Ave. at Sutter St., plans by Alfred W. Johnson, 681 Market St., church, incl. educational unit, chapel, fellowship hall and parlors on Junipero Serra Blvd. and 19 Ave., $300,000.

Fla., Clearwater — HOSPITAL — West Coast Hospital Assn., c/o Roy W. Wakeling, 425 S. Gordon Ave., hospital adn., $300,000.

Fla., Miami Beach—HOTEL—National Leasing Corp., c/o Norman M. Giller, archt., 1575 Washington Ave., Miami Beach, hotel, $850,000.

Ind., Gary—DEPARTMENT—STORE—J. C. Penney Co., 330 W. 34 St., New York, N. Y., 4 story 100x125 ft., brick, stone, rein.-con. department store, 532 Broadway $600,000, Beine, Hall & Curran, 607 Broadway, Gary, Ind., consult. engr. and archts.

N. Y., Brooklyn—CHURCH—Sacred Heart and St. Stephens Church, 25 First Pl., Brooklyn, plans by Freeman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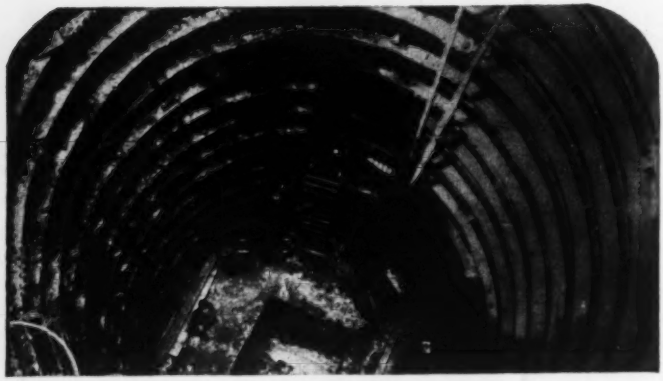

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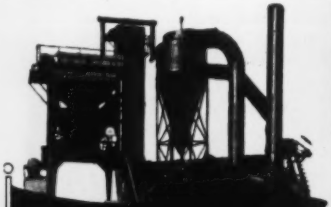

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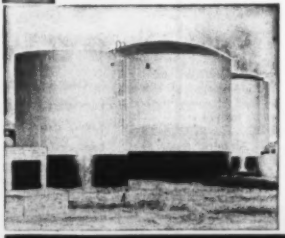

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P., Imperato, 375 Court St., Brooklyn, Zone 31, 1 story church at 117-25 Summit St., $300,000.

N. Y., Brooklyn—APARTMENT—Sterieff Realty Corp., 350 Lifferts Ave., Brooklyn, 25, N. Y., plans by Oscar I. Silverstone, 153 Pierrepont St., Brooklyn, Zone 21, 6 story apartment bldg. at 501 New York Ave., $787,000.

▲ **N. Y., Brooklyn**—POST OFFICE—Mayron Realty Corp., 38 W. 32 St., New York, 1, N. Y., plans by H. I. Feldman, 415 Lexington Ave., New York, Zone 17, 2 story, post office, 50-112 Second Ave. $1,600,000.

N. Y., Far Rockaway—APARTMENT—Village Homes c/o Kavy & Kovivitt, archts., 44 Court St., Brooklyn, N. Y. 6 story, 72-unit apartment McBride St., south of Mott Ave. $583,000.

▲ **N. Y., New York**—CONVENT, etc.—Sisters of Mercy, Wilson Park Tarrytown, plans by Eggers & Higgins, 100 E. 42 St., New York 17, N. Y., 3 story convent and chapel on east side of Williamsbridge Rd. between Pelham Parkway North and Astor Ave., $1,200,000.

N. Y., New York—APARTMENT—Baychester Constr. Co., 3660 Waldo Ave., New York, Zone 63, plans by Leo Stillman, 332 E. 149 St., New York, 51, N. Y., 6 story, apartment bldg. at 242 St. from Henry Hudson Parkway to Arlington Ave., $650,000.

▲ **N. Y., Rego Park**—HOUSES—Village Homes, c/o Kavy & Kavovitt, archts., 44 Court St., Brooklyn, 6 story, 390-unit apartment, Woodhaven Blvd., N.E.C., 98 St., $2,730,000; 6 story, 108-unit apartment, east of Woodhaven Blvd. south of 98 St., $756,000; 6 story 108-unit apartment, at south side of 98 St. east of Woodhaven Blvd., $756,000; 6 story 72-unit apartment, south side of 98 St. east of Woodhaven Blvd., $504,000; 6 story, 190-unit apartment, at Woodhaven Blvd., S.E.C. 98 St., $1,300,000.

▲ **N. Y., Schenectady**—HOSPITAL—General Electric Co., 1 River Rd., Schenectady, 2 story hospital, $1,000,000.

Tex., Beaumont—NURSES HOME, etc.—Baptist Hospital of Southeast Texas, Beaumont, 2 story brick exterior, nurses home and educational bldg., concrete frame, pier and beam fdn. $300,000.

Tex., Rockdale—HOUSING—Aluminum Co. of America, 801 Gulf Bldg., Pittsburgh, Pa., housing for plant personnel occupancy, near here, $550,000.

Vt., Northfield—DORMITORY—Norwich University, c/o Maj. Barber, Northfield, plans by Milton L. Crandall, 10 Broad St., Glens Falls, N. Y., dormitory, $340,000.

▲ **Wash., Bremerton**—HOUSING—New Housing Inc., 2017 W. 57 St., Seattle, 300 housing units in View Ridge Dist., $3,000,000.

Wash., Pasco—HOUSES—Modern Home Builders, Inc., 3419 34 Ave. W., Seattle, 91 houses, $900,000.

▲ **Wyo., Green River**—HOUSES—West Vaco Chemical Div., Food Machinery & Chemical Corp., Green River, 200 houses for employees of the chemical plant, $1,000,000.

Ont., Cornwall—HOSPITAL—Owner, c/o Dr. E. Ernard, 425 Second Ave., hospital, $300,000.

INDUSTRIAL BUILDINGS

▲ **Colo., Pueblo**—MILL—Colorado Fuel & Iron Co., seamless tube mill, $30,000,000.

Conn., Greenwich—FACTORY ADDN.—The Homelite Corp., Riverdale Ave., Pemberwick, 1 story, parking and receiving dpts. factory addn., parking area, $100,000.

▲ **Ill., Argo**—TERMINAL EXPANSION—General American Transportation Co., 135 S. La Salle St., Chicago, Zone 3, terminal expansion, $1,500,000.

Ill., Kankakee—PLANT—General Foods Corp., 250 Park Ave. New York, N. Y., dog food plant, $150,000.

Ind., Muncie—FACTORY—Foster-Forbes Co., Muncie, 1 and 2 story, 200x400 ft., brick, steel factory South and Madison Sts., $500,000. W. E. Burt, 319 W. North St., Muncie, engr.

▲ **Ind., Terre Haute**—PLANT—Commercial Solvents Co., 1331 S. 1 St., research structure in connection with the local plant, $2,000,000.

La., Baton Rouge—REFINERY—Standard Oil Co. of New Jersey, North Baton Rouge, reconstruct 2 distillate treating units at refinery, $250,000.

Mass., Brighton—FACTORY, etc.—E. S. Stimpson & A. J. Stimpson, Jr., c/o A. J. McFarland, 1 Federal St., Boston, factory and offices mfg. electronic parts for airplanes. $400,000. Lockwood Greene Engineers, Inc., 40 Central St., Boston, consult. engr.

▲ **Mich., Midland**—RESEARCH FACILITIES—Dow Chemical Co., 135 S. LaSalle St., Chicago, Ill., research facilities, $2,000,000.

Mich., Saginaw—WAREHOUSE—Bond Storage Co., Saginaw, 1 story rein.-con. warehouse, S. Niagara St., $390,000.

N. Y., Brooklyn—OIL TANKS—Brooklyn Union Gas Co., 176 Remsen St., Brooklyn, two oil tanks and 1 story bldg. at 160 Lombardy St., $250,000. Reinhard L. Heenen, c/o owner, engr.

Okla., Grandfield—REFINERY—Bell Oil & Gas Co., Grandfield, cracking unit for refinery area, $750,000.

Tex., Eagle Pass—PLANT—Frozen Food Products Co., Eagle Pass, frozen-food products plant, $250,000.

▲ **Tex., Fort Worth**—REFINERY—Premier Petroleum Co., Mt. Olivet Rd., Fort Worth, 4,300 bbl. daily capacity catalytic cracking refinery unit, $950,000; 380 bbl. capacity catalytic polymerization refinery unit, $350,000.

▲ **Tex., Rankin**—PLANT—Phillips Petroleum Co., Bartlesville, Okla. and Humble Oil & Refining Co.,

Humble Bldg., Houston, Tex., natural gasoline plant, $2,000,000.

Ont., Maitland—TERMINAL STATION—Trans-Northern Pipe Line Co. Ltd., 25 E. Adelaide St., Toronto, terminal station for oil pipe line, Approx. $100,000.

Ont., Toronto—FACTORY—S. Cooper, C. Gold & H. Sugar, 20 Camden St., plans by Benjamin Brown, 21 Dundas Sq., 5 story, 55 ft. high, 56x75 ft., brick, steel frame factory, Camden St., near Spadina Ave. $100,000.

Ont., Welland—PLANT ADDN.—General Tire & Rubber Co. of Canada, Ltd, 666 W. Adelaide St., Toronto, plant addn., Approx. $100,000.

▲ Que., Crabtree Mills—PLANT—Howard Smith Paper Mills Ltd., Windsor Mills, expansion of wood products plant for processing into various finished paper products from pulp, Approx. $14,000,000.

▲ Que., Windsor Mills—PLANT—Howard Smith Paper Mills Ltd., Windsor Mills, expansion of wood products plant enlarging of pulp mills, etc., $7,000,000.

UNCLASSIFIED

Colorado—RURAL DISTRIBUTION LINES—Y-W Electric Assoc., Akron, 294 mi. rural distr. lines and sys. imprvts., Yuma Co. $400,000.

Indiana—PIPE LINE—Indiana Gas & Water Co., 1202 Broad St., New Castle, 7 mi. gas pipe line, Henry Co. $125,000.

La., Madisonville — NATURAL GAS SYSTEM — Town, $175,000 bond election Sept. 18, natural gas sys.

Nebraska—RURAL DISTRIBUTION LINES—Rural Electric Co., Pine Bluffs, Wyo., 328 mi. rural distr. lines, Banner, Cheyenne and Kimball Counties. $150,000. Flora Eng. Co., 1717 E. Colfax Ave., Denver, Colo., consult. engr.

Nebraska — RURAL DISTRIBUTION LINES — Southwest Electric Membership Corp., Palisade, 285 mi. rural distr. lines, Chase, Dundy, Hayes, Hitchcock and Frontier Counties. $325,000. Flora Eng. Co., 1717 E. Colfax Ave., Denver, Colo., consult. engr. CD 3/6/50.

Nebraska—RURAL DISTRIBUTION LINES—Custer Public Power Dist., Broken Bow, 396 mi. rural distr. lines in Blain, Custer, Lincoln, Logan, Loup, McPherson, Sherman and Thomas Counties. $400,000. Raymond H. Reed & Co., Columbus, Neb., consult. engr. CD 5/16/49.

▲ Texas—OIL PIPE LINE—Continental Pipe Line Co., 502 Nafigation Blvd., Corpus Christi, 87 mi. 8 in. crude oil pipe main between Port Isabel and McAllen, $1,500,000; 23 mi. 8 in. crude oil pipe main from Rincon field near Rio Grande City to McAllen $445,000; 6 pumping stations, location every 22 mi. starting at Rio Grand City and running to Port Isabel all on existing 143 mi. pipe main between Rio Grande City and Port Isabel, $550,000.

Texas—PIPE LINE—Texas-New Mexico Pipe Line Co., Midland, addnl. pipe line constr. to connect Scharbauer and Sweetie Peck Fields with Midland Station, 27 mi. 6 in. $175,000.

Texas—TELEPHONE POLE LINES—Santa Rosa Telephone Co-operative, Vernon, 558 mi. overhead telephone pole lines, Willbarger, Foard, Hardeman and areas of Clay and Wichita Counties, $200,000; rebuilding 81 mi. pole telephone lines, Wilbarger and Foard Counties, $75,000; Dial Exchange and Storage Bldg., estimated $300,000.

Tex., Corsicana—SWITCHYARDS—Southern Pacific Co., E. E. Mayo, ch. engr., 65 Market St., San Francisco, Calif., addnl. railway switchyards, incl. trackage, $100,000.

Washington — RURAL DISTRIBUTION LINES — Stevens County Electric Co-operative, Colville, Wash., 42 mi. rural distr. line and sys. imprvs., Stevens Co. $700,000. CD 10/21/48.

Alta., Red Deer—CURLING RINK—Municipality, 148x241 ft. frame, stucco curling rink, (85x200 ft. ice surf). $160,000.

▲ Que., Montreal — TUNNEL — Municipality, City Hall, tunnel under St. Lawrence River with vehicular roadways added. $30,000,000. H. A. Bibeau, City Hall, city engr.

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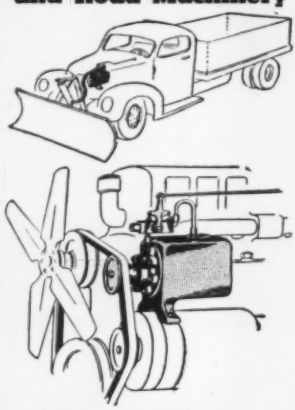

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CONSTRUCTION REPORTS-Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

▲† **Mass., Weymouth**—AIRPORT IMPRVS.—B.A. 9/11—First Naval Dist., Pub. Wks. Office, 495 Summer St., Boston, runways, taxiways and aircraft parking areas, South Weymouth. $2,485,000 Charles T. Main, Inc., 80 Federal St., Boston, archt. and engr. CD 8/13.

BIDS ASKED—BUILDINGS

Mass., Taunton—INFIRMARY—B.A. 9/12—State, Dpt. Mental Health, 15 Ashburton St., Boston, infirmary for girls Myles Standish State School, $325,000. Plans deposit $25 refundable. Leland & Larson, 814 Statler Bldg., Boston, archts., Richard D. Kimball Co., 6 Beacon St., Boston, mech. engrs. CD 9/26/49.

HEAVY CONSTRUCTION
LOW BIDS AND CONTRACTS

MAINE—State Hy. Comn., Augusta,
Cyr & Denico Co., Waterville, Me. CA **$198,439.** Railroad crossing underpass, Otter Brook Bridge and Little Madawaska River Bridge, access road Maine A-1, Contr. II, Caribou. Bids Aug. 22. CD 8/10.

Wyman & Simpson, Inc., 283 Water St., Augusta, Me. CA $235,888. Airport imprvs., incl. 800 ft. runway, AUGUSTA, ME. State Aeronautics Comn., State Airport, Augusta, Me. CD 8/10, under LB.

C. J. Maney, 24 Dane St., Somerville, Mass. CA **$344,000.** Swimming pools and bath house alterations, North End Park, BOSTON, MASS. City, Trustees Geo. Robt. White Fund, City Hall, Boston, Mass. Awarded Aug. 14. CD 8/13, under LB.

Canter Constr. Co., 185 Corey Rd., Brookline, Mass. CA $61,000. Cyclotron off Oxford St., CAMBRIDGE, MASS. Harvard University, c/o Mr. Hooper, 25 Shattuck St., Brookline, Mass.

State, Admin. Bldg., Logan Airport, East Boston, Mass. Rejected bids. Install elec. distr. sys., SAMB 20, EAST BOSTON, MASS. LB **$369,556.** Will re-advertise. CD 4/26, under LB.

F. E. Daddario Corp., 73 Reemont St., Boston, Mass. LB. **$66,320.** Water mains, MARBLEHEAD, MASS. Town, Bd. Selectmen, Town Hall, Marblehead, Mass. Bids Aug. 23. CD 8/15.

CONNECTICUT—State Hy. Dpt., Hartford,
Jones Constr. Co., Columbia Route 6, Willamantic, Conn. LB, **$60,069**, highway and bridge, Griswold. Bids July 30. CD 7/17.

Elm City Constr. Co., Montowese Ave., New Haven, Conn., CA, **$70,000**, bit. macad. paving and c. conc. culvert over West River E. Ransdell St. from Whaley Ave. to McConaughty Terrace, NEW HAVEN, CONN. City Hy. Dpt., New Haven, Conn. CD 8/20/43.

Martin & Zanke Co., Inc., 215 Main St., Rocky Hill, Conn., LB, **$63,022**, sewers, PLAINVILLE, CONN. Town Bd. Sewer Comn., Plainville, Conn. Bowe, Albertson & Assocs., 110 William St., New York N. Y., engrs. CD 2/7/46.

BUILDINGS
LOW BIDS AND CONTRACTS

Vappi & Co., Inc., 240 Sidney St., Cambridge, Mass. CA **$160,000**, mfg. PLANT, NEWTON HIGHLANDS BR. BOSTON, MASS. Forbes & Winslow, 60 State St., Boston, Mass. Wil & Stevens, Inc., 5 Purchase St., Boston, Mass., lessee.

James S. Kelliher, 1245 Hancock St., Quincy, Mass. CA **$559,319.** Trade SCHOOL and high SCHOOL addn., QUINCY, MASS. City, Supt. Schools, 52 Coddington St., Quincy, Mass. Awarded Aug. 20. CD 8/21, under LB.

▲ **Thomas O'Connor & Co., Inc.**, 238 Main St., Cambridge, Mass. CA **$1,000,000.** Contr. 5, superstructure, mfg. electric POWER PLANT, incl. fdn., North Weymouth, WEYMOUTH, MASS. Boston Edison Co., 39 Boylston St., Boston, Mass. Jackson & Moreland, 31 St. James Ave., Boston, Mass., engrs.

Coleman Constr. Co., 49 Westminster St., Providence, R. I., LB. Approx. **$90,000.** Brick, steel BOILER ROOM, PUMP HOUSE, NORTH PROVIDENCE, R. I. Roman Catholic Diocese of Providence, Our Lady of Fatima Hospital, High Service Ave., North Providence, R. I. John Hogan, 385 Westminster St., Providence, R. I., archt.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

N. J., New Providence—B.A. 9/10—Boro, Mayor and Boro Council, Thomas C. Musson, clk., New Providence sewer, Springfeld Ave. and 1 St.

N. J., South Orange—B.A. 9/10—Bd. Trustees, Village of South Orange, Village Hall, water system imprvs.

N. Y., Mineola—B.A. 9/11—Bd. Supervs., Nassau Co., Charles Strohson, clk., Old Court House, Franklin Ave., M trunk sewer line, Contr. 1002-2T-10, Nassau Co.-Valley Stream and Malverne, CD 4/5, under LB.

Pa., Phila.—PLAYGROUNDS—B.A. 9/11-Dpt. P. Welfare, City Hall Annex, Champlin, Happy Hollow and Samuel playgrounds addns. and imprvs. Approx. $100.000. Jack S. Steele Co., 1416 Chestnut St., archt CD 2/8/45.

N. Y., East Meadow—B.A. 9/12—Bd. Supervs, Nassau Cl. Charles Strohson, clk., Old Court House, Franklin Ave., Mineola, water supply sys., imprvs., Hempstead-Bethpage Turnpike (Meadowbrook Hospital site.)

N. Y., Perrysburg—B.A. 9/12—Henry A. Cohen, Dir. Bureau contracts & Accounts, Dpt. P. Wks., The Governor Alfred E. Smith State Office Bldg., Albany, sewage disposal plant, J. N. Adam Memorial Hospital. Plans deposit $20.

▲ **Md., Baltimore**—B.A. 9/13—City, Bureau Hys., 303 Municipal Bldg., Zone 2, Russell St. viaduct, to carry street over B. & O. R.R. tracks at Stockholm St., 1,737 ft. long, 89 ft. wide, earth filled approach ramps, $2,500,000. Plans deposit $15, Rummel, Klepper & Kahl, 1021 N. Calvert St., engrs., Jas. H. McKay, c/o owner, hy. engr. CD 4/13/50.

BIDS ASKED—BUILDINGS

N. J., East Newark—MUNICIPAL—B.A. 9/10—Boro of East Newark, Borough Hall, East Newark, municipal bldg. on Sherman Ave.

N. J., Trenton—BOILER PLANT—B.A. 9/17—State Div. Purchase, and Property, State House, Trenton, boiler plant addn., alterations at New Jersey State Hospital, $150,000. CD 1/23/46.

Del., Dover—DORMITORY—B.A. 9/18—Delaware State College, Dover, dormitory. Approx. $300,000. Louis E. Doane, Penna. R.R. Bldg., Wilmington, engr. Massena and Du Pont, 704 Delaware Ave., Wilmington, archt. CD 11/23/49.

N. J., River Edge—SCHOOLS—B.A. 9/18—Bd. Educ. River Edge Boro, 910 Bogert Rd., Cherry Hill Elementary School addn., $635,000; elementary school on Midland Ave. Extended date. CD 8/20.

† **Pa., Erie**—POST OFFICE—B.A. 9/18—Pub. Bldgs. Service, 250 Hudson St., New York 13, N. Y., misc. repairs to U. S. Post office.

† **Del., Dover**—HEADQUARTERS BLDG. ALTERATION, etc.—B.A. 9/19—U. S. Eng., 121 N. Broad St., Phila., 1, Pa. headquarters bldgs. alterations and addns. at Dover Air Force Base, Inv No. ENG 36-109-52-15.

† **Pa., New Cumberland**—ADMINISTRATION BLDG.—B.A. 9/20—U. S. Eng., 121 N. Broad St., Phila., Zone 1, administration bldg. and site imprvt., New Cumberland General Depot., Inv. No. Eng. 36-109-52-18. CD 2/2.

▲ **N. J., Skillman**—HOSPITAL—B.A. 9/24—State Div. Purchase & Property, Dpt. Architecture, State House, W. State St., Trenton, N. J. general contract, structural steel, misc. iron, electric plumbing, heating and ventilating Hospital for Skillman Village for Epileptics, $3,000,000. Extended date. CD 8/21.

† **N. Y., Buffalo**—LABORATORY EQUIP—B.A. 9/25—Veterans Admin., Munitions bldg., Wash. 25, D. C., research laboratory equip installation in Hospital Bldg. No. 1. for Veterans Admin Hospital. Spec. 51164. Proj. 2861.

▲ **N. Y., Syracuse**—DORMITORY—B.A. About 10/1—Syracuse University, Syracuse, women's dormitory for 580 students, to be called Shaw Dormitory. $1,500,000. Lorimer & Rich, 215 Montague St., Brooklyn, Zone 2, archts. CD 12/6/49.

Md., Baltimore—PLANT—Bids Asked—Pittsburgh Plate Glass Co., Brush Div., 3221 Frederick Ave., 1 story, 125 x 170 ft., rein.-con., masonry brush plant addn.

HEAVY CONSTRUCTION
LOW BIDS AND CONTRACTS

NEW JERSEY—State Hy Dpt., 1035 Parkway Ave., Trenton, N. J.
Villa Contg. Co., 233 North Ave. W., Westfield, N. J. LB, **$317,816**, repaving on Route 28 from Route 27 to S. Broad St., 0.822 mi. Eliazbeth, Union Co. Bids Aug. 16. CD 7/30.

American Paving Corp., Bessemer St., Newark, N. J., CA **$138,321**, resurf. 19 city streets, ELIZABETH, N. J. Bd. P. Wks., Elizabeth, N. J.

▲ **Berlanti Constr. Co.**, 15 Oakland Ave., Harrison, N. Y. LB, **$3,654,796**, sewage disposal plant and sewage system, TRENTON, N. J. Ewing-Lawrence Sewerage Auth 156 W. State St., Trenton, N. J. Bids Aug. 20. CD 8/15.

▲ † **S. A. Healy Co.**, 61 Westchester Ave., White Plains, N. Y., CA. Approx. **$7,000,000.** rock excavation for Camp Ritchie, Md. project. PENNSYLVANIA. U. S. Eng., 1st and Douglas Sts., Wash. D.C. Shreve, Lamb & Harmon, 11 E. 44 St., New York, N. Y., archts., Parsons, Brinckerhoff, Hall & Macdonald, 55 Broadway, New York, N. Y., engrs.

PENNSYLVANIA—State Hy. Dpt., 506 N. Office Bldg., Harrisburg.
Highway Paving Co., Box 297, Blossburg, Pa., LB. **$77,744.** replacement of rein.-con. bridge floor and roadway wid'n., 2,907 ft., T. R. & S. 14, 15 and 220, Lycoming Co.,
received no bids Aug. 24, replacement of rein.-con. floor on George Westinghouse Bridge, 1,559 ft., T. R. U.S. 22 and 30, Allegheny Co., Bids Aug. 24. CD 8/9.

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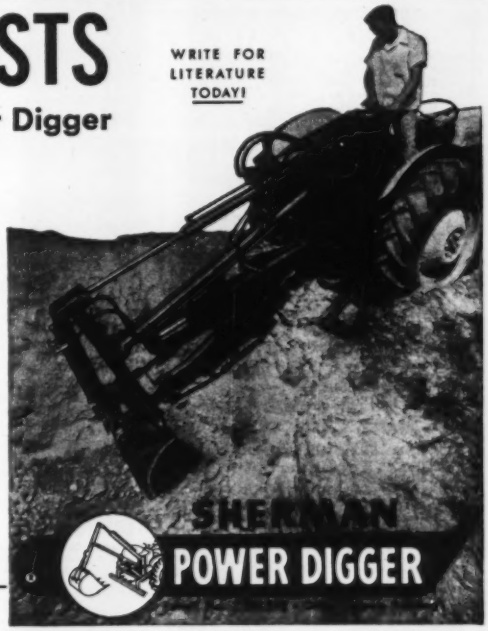

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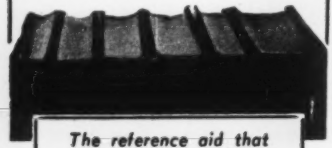

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Samuel Glasgow, Glenside, Pa., LB, $164,079, intercepting sewer, Wyncote Sect., ELKINS PARK, PA. Cheltenham Twp. Comrs., Elkins Parks, Pa., George G. Mebus, Glenside, Pa., engr. Bids Aug. 6.

Amedio DeSabato, 1235 Porter St., Phila. Pa., LB, $79,698, Sewers, Schedule B-1, PHILA. PA. Dpt. P Wks., City Hall Annex, Phila. Pa., Bids Aug. 21. CD 8/17.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2.

C. J. Langenfelder & Son, Box 5106, Baltimore, Md. CA $521,415, single 64 ft. span steel I beam bridge on rein.-con. substructure supported on treated timber piles over Cox Creek with roadway width of 44 ft. and two 18 in. safety curbs, grading, drainage 0.55 mi., Rte. 50, East Approach for Chesapeake Bay Bridge beginning at East Abutment on filled causeway, exten. 2.6 mi. eastwardly along line 1,000 ft. south of Stevensville, Contr. CBB 5-2-87, Queen Annes Co. CD 8/6 under LB.

John L. Sullivan, 3220 Greenmount Ave., Baltimore, Md. LB $77,922. Contr. 243 D. S. & W. Items 1, 2 and 3, c.i. pipe and appurtenances, meter vaults, sanitary sewers, rein.-con. pipe, manholes, etc., TOWSON, MD. Comrs., Baltimore Co., Court House, Towson, Md. Bids Aug. 8. CD 8/2.

† **Garrett Miller & Co.,** 4 and Orange Sts., Wilmington, Del., LB, $204,436, electrical and navigation aid New Castle Airport, No. 36-109-51-206, NEW CASTLE, DEL. U. S. Eng., 121 N. Broad St., Phila., Pa. Bids June 26.

BUILDINGS

LOW BIDS AND CONTRACTS

Anthony J. Volpi, 22 Shoemaker Lane Rd., Wayne, Pa., CA, $500,000, RESIDENTIAL DEVELOPMENT, De-Kalb Pike, CONSHOHOCKEN, PA. Bearoff Homes, Inc., 135 W. 2 St., Bridgeport, Pa.

▲ **Weinstein Constr. Co.,** 573 E. Tallmadge Ave., Akron, 10, O., LB, $1,096,300, general constr. HIGH SCHOOL for Millcreek Twp. School Dist., ERIE, PA. State Public School Bldg. Auth., 1400 N. Cameron St., Harrisburg, Pa., Bids Aug. 23. C. R. Greiner, c/o owner, ch. engr. CD 8/2.

M. I. T. N.W. Corp., Bankers Security Bldg., Phila, Pa., Separate contracts. Approx. $800,000. RESIDENTIAL DEVELOPMENT, 28 and 29 Sts., and Newkirk St. PHILA, PA.

F. Hoffman Co., 901 Wood St., Wilkinsburg, Pa., CA, Approx. $700,000. 2 story bsmnt., brick tile, Junior-Senior HIGH SCHOOL and administration bldg., PITTSBURGH, PA. Western Penna. School for Blind, 201 Beleffield Ave., Pittsburgh, Pa., Charles W. and Edward Stotz, Bessemer Bldg., Pittsburgh, Pa., archts.

▲ **Banks & Lee, Tower** Bldg., Wash., D. C., CA, $1,960,000 7 story, brick APARTMENT and 42 two-story brick apartments in southeast Washington; apartment 1719 Savannah St.; apartments 3410-20 Stanton Rd.; 1720-24 Trenton Place; 3409-21 18 St.; 1815 Trenton Place; 3510-20-30 18 St.; 1810-20 Mississippi Ave.; 3511-31 19 St.; 1725-29 Alabama Ave.; 3300-20 Stanton Rd.; 3301-21 18 St., 1811 Alabama Ave.; 3300-2 18 St., 180-24 Savannah St., 1610-14 Savannah St.; 3325 Stanton Rd.; 1809-25 Savannah St.; 3420 18 St. and 2421 19 St., WASHINGTON, D. C. Parklands Inc., 1404 K St. N. W.; Wash., D. C., Le Roy L. Werner 7242 15 Place, N. W., Wash., D. C., archt. Awarded Aug. 20.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

Ala., Dadeville—B.A. 9/12—Tallapoosa County c/o county engr., Court House, 2.65 mi. grading, paving on Franklin Road.

La., Livingston—B.A. 9/12—Livingston Parish Police Jury, 1,200,000 cu. yd. channel excav.

† **Fla., Cocoa**—WELFARE BLDG.—B.A. 9/14—U. S. Eng., P. O. Box 4970, Jacksonville, Fla., welfare bldg. Patrick Air Force Base, Serial No. Eng 08-123-52-32, Extended date. CD 8/28.

BIDS ASKED—BUILDINGS

La., Baton Rouge—CONVENT—B.A. 9/12—St. Anthony's Roman Catholic Church, 2417 Choctaw Blvd., convent, Diboll-Kessels & Assoc., 637 Pere Antoine Court, archts. CD 4/2.

Fla., Vero Beach—SCHOOL ADDNS., etc.—B.A. 9/15—Indian River County Bd. P. Instruction, Vero Beach, Vero Beach High School addns., alterations, Duncan, Stewart & McVoy, Arcade Bldg., Vero Beach, Fla., archts. Extended date. CD 7/25.

Tenn., South Pittsburg—CHURCH—B.A. 9/15—First Baptist Church, c/o J. H. Wallace, archt., 927 James Bldg., Chattanooga, church.

Fla., Green Cove Springs—SCHOOL—B.A. 9/17—Clay Co. Bd. P. Instruction Green Cove Springs, Fla. high school, Approx. $300,000. J. Brooks Haas, 620 Jackson St., Jacksonville, archt.

Fla., Titusville—SCHOOL ADDNS., etc.—B.A. 9/18—Brevard county Bd. P. Instruction, Titusville, Titusville Junior-Senior High School addns., alterations. Harry M. Griffin, Daytona Beach, Fla., archt.

Ga., Marietta—SCHOOL—B.A. 9/20—Cobb Co. Bd. Educ., Marietta, high school, Acworth, plans deposit $50. Bothwell & Nash, 206 Roswell St., Marietta, Ga., archts. CD 7/24/50.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

VIRGINIA—State Dpt. Hys., Central Highway Office Bldg., 1221 E. Broad St., Richmond, VA.

McLean Contg. Co., Fidelity Bldg., Baltimore, Md., LB $218,470, 446 ft. swing span bridge over North Landin River south of Norfolk, replacing the Pungo ferry, Route 190, Princess Anne Co.

A. J. Ponton, Jr., Morrison, Va., LB, $84,230, overpass and approaches on Virginian R.R. at Kenbridge, Route 40, Lunenburg Co.

Faulconer Constr. Co. Charlottesville, Va., LB, $98,322 215 ft. bridge and approaches at Buck Creek 9 mi. north of Winchester, US 522, Frederick Co.

cancelled bids to have been opened Aug. 16, 136 ft. underpass of Norfolk and Western Ry., US 19 and 11 east of Bristol Washington Co. Bids Aug. 16 CD 8/10.

VIRGINIA—Dpt. Hys., Central Highway Office Bldg., 122 E. Broad St., Richmond, Va.

Pioneer Constr. Co., 324 Albermarle Ave. S.E., Roanoke, Va., LB, $90,542, stabilized base, hard surf. 3.47 mi. between Kelso Mills and Penick Mill, Route 682, Bedford Co. LB $60,119, stabilized base 2.58 mi. north of Barbours Creek P. O., Route 615, Craig Co. LB $79,382, hard surf. stabilized base 3.09 mi. to Clayter Lake Park, Route 660, Pulaski Co.

McAmis Bros., North Tazewell, Va., LB, $110,697 stabilized base hard surf. 2.99 mi. east of Horsepen on the road toward Pocahontas Route 644, Tazewell Co. LB $114,372, stabilized base hard surf. 4.4 mi. between Toms Creek and Dickenson County line, Route 652 Wise Co.

Yount & Co., Staunton, Va., LB, $126,005, stabilized base hard surf. 5.92 mi. from US 11 near Greenville to Rockbridge County line west of Raphine, Route 613, Augusta Co.

Jones and Clary Constr. Co., Lawrenceville, Va., LB $69,513, stabilized hard surf. 8.14 mi. between Charlie Hope and Ordsburg, Routes 616, 612, 644, Brunswick Co.

A. C. Shearer, Chapel Hill, N. C., LB. $131,379, soil cement base hard surf. 7.06 mi. between Glenmore and Manteo, Routes 601, 655, Buckingham Co.

Walter N. Webber, Lynchburg, Va., LB, $83,979, stabilized base hard surf. 2.03 mi. 98 ft. bridge across Big Guinea Creek north of Stony Point Mills to replace an obsolete bridge and reconstr. highway, Route 600 Cumberland Co.

Burton P. Short & Son, Petersburg, Va., LB $61,763 stabilized base hard surf. 6.5 mi. of Wharfs Store in Dinwiddie County and south of Rives School in Prince George, Dinwiddie and Prince George Counties.

Adams & Tate Constr. Co., 2725 Roanoke Ave., Norwich, Roanoke, Va., LB, $76,716, mod fied penetration macad. 6.22 mi. near Delhart, Route 622, 624, Grayson Co.

D. E. Woorley Constr. Co., Rocky Mount, Va., $98,995, hard surf. stabilized base, 1.37 mi. 128 ft. br dge across Reed Creek east of Altavisat Route 668, Pittsylvania Co.

received no bids Aug. 15, stabilized base hard surf. 4.91 mi. from Widener Valley School to Route 604, Route 605, Washington Co. grading draining, penetration 2.92 mi. north of Birchleaf, Routes 607, 670, Dickenson Co. Bids Aug. 15. CD 8/10.

▲ **Blackwell Engineering Co.,** Warrenton, Va., CA $1,213,700. 8 m.g.d. sewage treatment plant and pumping station for Sanitary Dist. No. 1, FAIRFAX, VA. Fairfax Co. Court House, Fairfax, Va. Bids July 26. CD 7/30. under LB.

Lee Const. Co., 422 S. Church St., Charlotte, N. C. CA. $716,000. WW imprvs., SHELBY, N. C. City, Shelby, N. C. Bids Aug. 10. CD 8/22. under LB.

† **C. Y. Thomason Co.,** Greenwood, S. C. CA., $529,709, refueling facilities at Shaw Air Force Base SUMTER, S. C. U. S. Eng., 33 Customhouse, Charleston, S. C.

▲ **LOUISIANA**—State Hy. Dpt., Highway Office Bldg., Baton Rouge.

Texas Bitulithic Co., Burma Rd., New Orleans, La. LB $1,778,874. Grading, drainage, rein.-con. deck girder bridges, shell base course or shell base course, b. conc. 14.222 mi. Boutte-Huey P. Long Bridge Hy., State Rte. 2, S. P. 5-09-07 and 5-10-07, F. A. Proj. F 216 (10) St. Charles and Jefferson Parishes.

Forcum-James Co., 1565 Choctaw Dr., Baton Rouge, La. LB $407,667. Grading, drainage structures, b. conc. bit. surf. tr. 6.264 mi. Prairieville-Bayou Manchac and Nesser-Baton Rouge Hys., State Rte. 1500, S. P. 7-07-06 and 7-09-16, F. A. Proj. FI 379 (4) and FI 366 (7), Ascension and East Baton Rouge Parishes.

Barber Brothers Co., 2636 Dougherty Dr., Baton Rouge, La. LB $491 589. Grading, drainage structures, soil cement base course, bit. surf. tr. (asph. cement) b. conc. 4.761 mi. Port Allen-Mississippi River Bridge Hy., State Rte. 168, S. P. 50-07-11, F. A. Proj. F 399 (3), West Baton Rouge Parish.

Henry & Hall, Dubach, La. LB $311,831. Grading, shaping roadway, 7 creosoted timber trestle span bridges, grav. base course, bit. surf. tr. 9.18 mi. Livernool-Ke twood Hy., State Rte. 71, S. P. 263-02-02 and 263-03-05, St. Helena and Tangipahoa Parishes. Bids Aug. 22. CD 8/10.

KENTUCKY—State Hy. Dpt., Frankfort.

McDade & McDade, Fulton, Ky. LB $62,699. bit. surf. Class C-1 and A-2 seal 33.101 mi., Hickman-Carlisle and Fulton Counties.

H. K. Williams Co., Inc., 4141 Park Blvd., Louisville, Ky. LB $110,620. bit. surf. Class I 6.546 mi., Jefferson Co.

Kentucky Road Oiling Co., Frankfort, Ky. LB $104,861. bit. surf. Class I, waterbound base, slag aggregate 1,318 mi. Ashland-Grayson Rd., FI 8 (6), SP 10-165, Boyd Co.; LB $63,403. traffic bound limestone 2.785 mi., Middle Fork-Breathitt Co. line road, RS 77-280, Magoffin Co.

Todd & Williams Contractors, Inc., 111 James Court, Lexington, Ky. LB $79,659. grade, drain, traffic bound limestone 4.554 mi., Deering Cumberland River Rd., SP 118-860, Whitley Co.

Hinkle Contg. Co., Parish, Ky. LB $84,637. erosion control 15.276 mi., Alexandria-Falmouth Rd., F 367 (12), SP 19-11, 19-211, 19-111, 96-237, Campbell and Pendleton Counties.

Harry O. Wyse, 881½ High St., Lexington, Ky. LB $97,991. grade, drain, cement conc. 0.509 mi., Carrollton-Bedford Rd., FI 197 (6), F 198 E (2), SP 21-152, 21-132, Carroll Co.

Nally & Gibson, Springfield, Ky. LB $205,292. bit. surf. Class I 3.607 mi., Springfield-Bardstown Rd., F 222 (6), SP 115-129, Washington Co.

Monroe-Cumberland Crushed Stone Co., Burkesville, Ky. LB $69,100. graded, drain, traffic bound limestone 5.054 mi., Wolf-Greek-Reservoir Park Rd., SP 104-438, Russell Co.

Corum & Edwards, Inc., Madisonville, Ky. LB $430,709. bit. surf. Class I 7.493 mi., Sebree-Henderson Rd., F 526 (12), SP 117-489, 51-319, Webster and Henderson Counties. LB $110,995. bit. surf. Class C-1 10-351. mi., Robards-Niagara-Hobbardsville Rd., RS 51-579 and Forg Island Rd., RS 51-619, Henderson Co.

R. E. Gaddie, Inc., Bowling Green, Ky. LB $177,654. bit. surf. Class I 2.985 mi., Munfordville-Elizabethtown Rd., FI 169 (12), SP 50-20, Hart Co.

The Allen Co., Winchester, Ky. LB $248,371. bit. surf. Class I 4.847 mi., Louisville-Shelbyville Rd., FI 117 (23), SP 56-58, Jefferson Co.

Traylor Bros. Inc., Upper Mt. Vernon Rd., Evansville, Ind. LB $194,743. grade, drain, bit. surf. Class I 1.108 mi., Grahamville-Paducah Rd., S 224 (1), SP 73-212, McCracken Co.

Geoghegan & Mathis, Bardstown, Ky. LB $338,835. bit. surf. Class I 6.349 mi., Bardstown-Springfield Rd., F 222 (4), SP 90-125, Nelson Co. Bids Aug. 17. CD 8/3.

Wright Contrg. Co., 504 25 Ave., Columbus, Ga., LB. $616,706. sewer sys. extens***Bush Bldg. Co., 805 8th Ave., N., Nashville, Tenn., LB $450,410. sewage treatment plant SHELBYVILLE, TENN., City, Shelbyville, Tenn., Bids Aug. 22.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **S. S. Kea,** Ivor, Va., CA. $1,052,500. white and colored HIGH SCHOOLS, EMPORIA, VA. Greensville Co., Emporia, Va., Dixon & Norman, 1103 E. Main St., Richmond, Va., archts., Bids Aug. 14.

B. & J. Constr. Co., 3432 Connecticut Ave., N. W. Wash., D. C., LB. Approx. $565,565, Mount Vernon HIGH SCHOOL alterations, addns. FAIRFAX, VA. Fairfax Co., Fairfax, Va., Dixon & Norman, 1103 E. Main St., Richmond, Va. archts., Bids Aug. 21. CD 9/23/49.

Carter-Hassell Contrg. Co., Waco and Naval Base Rd., Norfolk, Va., CA. $845,000. Roberts Park elementary SCHOOL, NORFOLK, VA. City, City Hall, Norfolk, Va., CD 8/21. under LB.

Laburnum Const. Corp., 918 E. Main St., Richmond, Va., CA. Approx. $763,635. DENTAL bldg. for Medical College of Virginia. RICHMOND, VA. State of Virginia, Richmond, Va., Bids Aug. 1. CD 8/9. under LB.

Augusta Co., Staunton, Va., rejected bids Aug. 23, county JAIL-OFFICE bldg., L.B. $635,000. STAUNTON, VA. CD 7/25.

Doyle & Russell, Central Natl. Bank Bldg., Richmond, Va., CA. $847,722. HIGH SCHOOL, VIRGINIA BEACH, VA. Town, Virginia Beach, Va., Bids July 26. CD 8/9. under LB.

▲ **E. I. Dupont De Nemours & Co.,** Du Pont Bldg., Wilmington, Del., Own Forces, $5,000,000, brick, steel explosives PLANT, MARTINSBURG, W. VA.

▲ **H. K. Ferguson Co.,** 1783 E. 11 St., Cleveland, O. CA. Approx. $3,315,000. paper box board PLANT, ROANOKE RAPIDS, NC. Roanoke Rapids Paper Co., c/o contractor.

R. H. Pinnix Co., Box 97, Gastonia, N. C., CA. $666,-875. HIGH SCHOOL, GREER, S. C. City, Greer, S. C. Bids Aug. 22. CD 8/10.

▲ **Newman Constr. Co.,** LaGrange, Ga., LB. $1,172,000 Southwest La Grange Elementary SCHOOL, LA GRANGE, GA. City Bd. Educ., La Grange, Ga. Bids Aug. 23. CD 7/19.

Redmock Constr. Co., 3508 Anderson Rd., Coral Gables, Fla., CA. $450,000, 69 HOMES, CORAL GABLES, FLA., Mary Carroll Martin, c/o contractor.

▲† **F. T. H. Pearce & Co.,** Anniston, Ala., LB, $1,883,-476. RANGE BLDG. and facilities at Redstone Arsenal, HUNTSVILLE, ALA. U. S. Eng., P. O. Box 1169, Mobile, 7, Ala. Bids Aug. 9. CD 7/11.

▲ **Consolidated Engineering Co., Inc.,** 4820 Eastern Ave., Baltimore, Md. CA $7,000,000. PLANT to produce micro-spheroidal type of synthetic silica-alumina catalyst, LAKE CHARLES, LA. Davison Chemical Corp., Davison Chemical Bldg., Baltimore, Md. Day & Zimmerman, Inc., Packard Bldg., Philadelphia, Pa., engrs.

MIDDLE WEST

BIDS ASKED—BUILDINGS

Wis., Laona—SCHOOL—B.A. 9/12—Laona Joint School Dist. 1, Laona, 1 story, part bsmnt., 60x290 ft., concrete steel, brick grade school. Plans deposit $50. Foeller, Schober, Berners, Safford and Jahn, 310 Pine St., Green Bay, Wis., archts.

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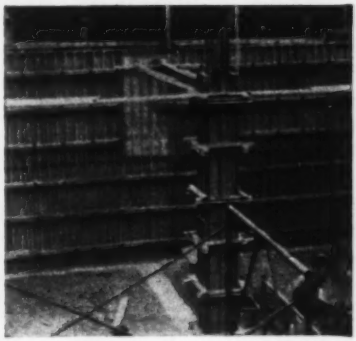

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BUILDINGS

LOW BIDS AND CONTRACTS

I. Bush & Son, 4204 S. Brook St., Louisville, Ky., CB $599,715, general contract, SCHOOL, CHARLESTOWN, IND. Charlestown Twp., Charlestown, Ind. CD 4/24.

Fred Borglund & Son, 8008 S. Chicago Ave., Chicago, 17, Ill., CA, $703,571, INFIRMARY ADDN., alterations, OAK FOREST, ILL. Cook Co., County Bldg., Chicago, 2, Ill. Awarded Aug. 9. CD 11/12/48.

Kornma Constr. Co., 820 W. 3 St., Sterling, Ill., LB $654,000, Northwest SCHOOL and Lincoln School, STERLING, ILL. School Dist. 134, Sterling, Ill. Bids Aug. 14. CD 8/9.

Permanent Constr. Co., 4100 N. 3 St., Milwaukee 12, Wis., CA 1 story L-shaped, 180x540x500 ft., concrete, brick, steel MANUFACTURING, KENOSHA, WIS. Nash-Kelvinator Corp., 5626 25 Ave., Kenosha, Wis. Bids Aug. 6. 7/25.

De Luxe Die Works, 20291 Hoover St., Detroit, Mich. Owner Builds. $85,000. 2 story, concrete block, masonry PLANT addn., Hoover St., DETROIT, MICH.

W. E. Wood Co., 4649 Humboldt St., Detroit, Mich. CA $185,000. 1 story, brick, masonry GARAGE, LAUNDRY and PAINT SHOP, DETROIT, MICH. Grace Hospital, 18700 Meyers St., Detroit, Mich. Smith-Hinchman & Grylls, 800 Marquette Bldg., Detroit, Mich., archts.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

Ia., De Witt—B.A. 9/11—City, street seal coated, $70,000. Romine, Sindt, & Snow, 224 Union Arcade, Davenport, Ia., engrs.

Kan., Olathe—B.A. 9/11—Johnson Co., lateral sewer Dist. 5 in Mission Twp. Myron Nelson, 6915 Johnson Dr., Mission Twp., RFD from Kansas City, Kan., ch. engr. CD 8/3.

Ia., Harlan—B.A. 9/14—City, sewer extensions, $153,611.

▲ Tex., Waco—COLISEUM, ETC.—B.A. 9/17—McLennan Co., c/o Court House, Program 1, 750 seating cacapity coliseum $475,000; Program 2, 4-H bldg. and dining hall, $300,000; Program 3, agricultural exhibit bldgs., $425,000. Plans deposit $25 each, Broad & Nelson, 505 N. Ervay, Dallas, and Harris T. Roberts, 1103 Arts Bldg., Dallas, archts., Ziegler & Houseman & Assoc., 1900 N. St. Paul St., Dallas, engrs. Extended date. CD 7/17.

▲† Tex., San Angelo—RUNWAYS—B.A. 9/26—U. S. Eng., 1127 Texas and Pacific Bldg., Fort Worth, 385,000 sq. yds. runways for Van Court Auxiliary Airfield. $1,000,000.

† Tex., Waco—OFFICERS QUARTERS—B.A. 9/28—U. S. Eng., 1127 Texas and Pacific Bldg., Fort Worth, 6 bachelor officers quarters at Connally Air Force Base. $750,000. CD 8/6.

▲† Tex., Waco—BARRACKS—B.A. 10/16—U. S. Eng., 1127 Texas and Pacific Bldg., Fort Worth, 2 masonry barracks bldg. for housing 238 Airmen at Connally Air Force Base. $1,250,000. CD 8/6.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MINNESOTA—State Hy. Dpt. 1246 University Ave., St. Paul,

J. W. Craig Co., 1814 NE California St., Minneapolis Minn. CA $597,104. grading, gr v. base, road-mixed base 15.1 mi., Pine Co. CD 8/27 under LB.

MINNESOTA—State Hy. Dpt., 1246 University Ave., St. Paul.

W. W Magee, Inc., 1397 Laurel Ave., St. Paul, Minn. CA $137,514. grading 1.8 mi., Winona. Bids Aug. 17. CD 8/9.

† **D. A. Gill Co.,** Sioux Falls, S. D. LB $79,834. infirmary bldg., Duluth Air Force Base, DULUTH, MINN. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids Aug. 15. CD 7/31.

† **S. J. Groves & Sons Co.,** 500 Wesley Temple Bldg., Minneapolis, Minn. LB $202,784. roads, streets and grading, DULUTH, MINN. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids Aug. 17. CD 8/2.

D. Borre, 81 Sherwood Ave., St. Paul, Minn. CA $130,755. Judicial Ditch No. 11, Repair D, Renville, Shibley and McLeod Counties, OLIVIA, MINN. Renville Co., Sibley and McLeod Counties, C. A. Strom, aud., Renville Co., Olivia, Minn. Bids Aug. 16. CD 8/2.

IOWA—State Hy. Comn., Ames

Iowa Bridge Co., 311 Central National Bldg., Des Moines, Ia., CA $532,708, bridge and culvert F-887 Group 1, Linn Co. CD 8/13, under LB. Bids Aug. 7.

† **Massman Constr. Co.,** 20 W. 9 St., Kansas City, Mo. LB $655,569. pile dikes and revetment, Inv. 52-10, MISSOURI. U. S. Eng., 601 Davidson Bldg., Kansas City, Mo. Bids Aug. 16. CD 8/7.

Kissick & Son Constr. Co., Hickman Hills, Mo. Clarkson Constr. Co., 26 and Jefferson Sts., Kansas City 8, Mo. U. S. Engineering Co., 914 Campbell St., Kansas City 6, Mo., A-Ace Pipe Cleaning Co., 2003 Indiana St., Kansas City 3, Mo. CA Total Cost $714,152. floor rehabilitation in Central Industrial dist. and Municipal Air Terminal, KANSAS CITY, MO. City, Pub Wks. Dpt., City Hall, Kansas City 6, Mo.

† **Lake Charles Electric Co.,** Lake Charles, La., LB $760,628, complete constr. car house and switchyard for Bull Shoals dam, CIVENG 03-050-52-1. ARKANSAS U. S. Eng., 300 Broadway, Little Rock, Ark., Bids Aug. 21. CD 7/12.

▲ **Chicago, Burlington & Quincy R. R. Co.,** H. R. Clarke, ch. eng., 547 W. Jackson Blvd., Chicago, Ill., Owner Builds. Approx. $1,500,000. construct centralized traffic control sys., Pacific Junction near Omaha to Lincoln, NEBRASKA.

† **Stanley W. Newman Co. Inc.,** Box 1646, Mobile, Ala., CA $510,660. headquarters bldg., base operations bldg., rehabilitation, etc. Inv. No. Eng 41-243-52-13, Bryan Air Force Base, BRYAN, TEX. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex., Bids Aug. 21. Awarded Aug. 25. CD 8/29. under LB.

† **U. S. Eng.,** 606 Santa Fe Bldg., Galveston, Tex., rejected bids Aug. 15, water supply well No. 1, L.B. $36,200; water supply well No. 2, L.B. $60,323, Inv. No. Eng 41-243-52-14, LACKLAND AIR BASE (Br. San Antonio) TEX. CD 8/22. under LB.

WYOMING—State Hy. Dpt., Cheyenne, Wyo.

Boatright-Smith, Box 554, Rawlins, Wyo., CA $143,978, grading, draining, base course surf., oil treatment by road mix method and misc. work 3.003 mi. Basin-Greybull Rd., Big Horn Co.

CA $147,754, grading, draining, base course surf., oil treatment by road mix method and misc. work 3.704 mi. Base Burlington Rd. from Burlington north to U. S. 20 and 0.627 mi. Greybull-Cody Rd., Big Horn Co.

Northwestern Eng. Co., P. O. Box 567, Denver, 1, Colo., CA, $116,138, grading, draining, base course surf., 3 continuous rein.-con. girder span bridge over No. Water Creek and misc. work 2.006 mi. Worland-Neiber Rd. Washakie Co.

Heald & Chrisler, Inc., Box 1028, Cody, Wyo., CA $99,493, grading, draining, base course surf. and misc. work on 8.665 mi. Powell-Elk Basin Rd., Park Co.

Lichty Constr. Co., P. O. Box 1068, Riverton, Wyo., CA, $141,114, grading, draining, 4 rein-con. culverts, base course surf. misc. work, 10.114 mi. of Green River-Linwood Road between Burnt Fork Road junction and Anvil Draw, Sweetwater Co. Bids Aug. 23, awarded Aug. 23. Grand total, $648,477.

COLORADO—State Hy. Dpt., 518 State Office Bldg., Denver, Colo.

Schmidt Constr. Co., Box 66, Grand Junction, Colo., CA $143,439, est. $151,249, grading, stabilization, structures 4.381 mi. on State Hy. No. 9, between Kremmling and Summitt County Line, S 0107 (4), Grand Co. 1

Carl V. Hill, 1844 13 Ave., Greeley, Colo., CA, $113,657, est. $114,968 grading, surf., structures 1.029 mi. SP 0002 (11); seal coat 16.098 mi. State H. No. 12, SPO 9-12-506; oil processing 9.808 and seal coating 15.998 mi. SPO 5-12-5.2, Combined Colorado Projects Las Animas and Otero Counties. Bids Aug. 16 awarded Aug. 17.

COLORADO—State Hy. Dpt., 518 State Office Bldg. Denver, Colo.

Schmidt Constr. Co., Box 66, Grand Junction, Colo., LB $148,732, est. $123,655, stabilization, surf., plant mixed oil processing 4.787 mi. on State Hy. No. 91, between Climax and Kokomo, Colo. Proj. F 014-1 (1), Summit and Lake Counties. Bids Aug. 16.

McMillon & Pascal, 3050 South Huron St., Englewood, Colo., CA, $230,475, est. over $60,000, sanitary sewer, East Side Sanitary Sewer District No. 7, DENVER, COLO. City and Denver Co., City and County Bldg., Denver, Colo. Bids Aug. 16. CD 8/6.

Marye-Northwestern Eng. Co., E. 60 Ave. and Hy. 6, Denver Colo., LB, $860,333, general contract;

Johnson & Davis, 2235 Arapahoe St., Denver, Colo., LB $162,098, heating and ventilating;

Sturgeon Elec. Co., 2124 Broadway, Denver, Colo., LB, $142,800, electrical work, for 2 story 151x444 ft. rein.-con., brick, store frame airlines office DENVER, COLO. City and Denver Colo., City and County Bldg., Denver, Colo. CD 7/5.

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BUILDINGS

LOW BIDS AND CONTRACTS

Madsen Constr. Co., 2110 Nicollet Ave., Minneapolis, Minn. LB $532,600. grade SCHOOL, between 56 and 57 Sts. and Russell and Sheridan Aves. south, MINNEAPOLIS, MINN. Bd. Educ., E. H. Enger, archt. engr., 807 Broadway N. E., Minneapolis, Minn. Bids Aug. 22. CD 7/25.

Brockmeyer Constr. Co., 634 N. Grand Blvd., St. Louis 3, Mo. CA $646,320. 1 story HOSPITAL addn., incl. maintenance shops, bldgs., ST. LOUIS, MO. St. Luke's Hospital, Bd. Directors, Robert B. Smith, pres., 5535 Delmar Blvd., St. Louis 12, Mo. Bids July 19. CD 6/22.

Murphy Boiler Co., Shawnee, Okla., CA. $914,734. est. $1,000,000. POWER PLANT at Oklahoma State Penitentiary, McALESTER. OKLA., Bd Affairs, Canitol, Oklahoma City 5, Okla., Benjam Engr. Co., American Natl. Bldg., Oklahoma City, Okla. engrs., Bids Aug. 14. Awarded Aug. 23.

Leslie Crockett Const. Co., 112 Academy Dr., Austin, Tex., LB. $692,620. est. $700,000. 1 story 68,000 sq. ft., rein.-con. and hollow tile with brick facing, Anderson HIGH SCHOOL, incl. 24 classrooms, gymnasium cafeteria, shops, offices AUSTIN, TEX. Austin Indeoendent School Dist., Austin Tex. Bids Aug. 23. Wilson & Cottingham, Littlefield Bldg., Austin, Tex. engrs. CD 7/25.

Houston Hill, Box 1466, Midland, Tex., CA $607,500. 30 room North Junior HIGH SCHOOL Job No. 513-3, MIDLAND, TEX. Midland Independent School Dist., Midland, Tex. Bids Aug. 23. CD 7/25.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Oregon**—B.A. 10/10—U. S. Eng., Bldg 602, City-County Airport, Walla Walla, Wash., 65 diffusion chamber valves for McNary Dam fishways, Inv. 52-12.

† **Arizona**—TRANSFORMER, etc.—B.A. 9/18—Bureau Reclamation, Dpt. Interior, Phoenix, Ariz., transformer, lightning arresters, disconnecting switches switch, etc, for Prescott Substation, Davis Dam Proj., Spec. 300S-30. L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

† **Wash., Spokane**—REFUELING SYSTEM—B.A. 9/18—U. S. Eng., P.O. Box 1217, aircraft refueling system and addnts. to bulk fuel system at Fairchild Air Force Base, ENG. 45-165-52-5. Col. W. H. Mills, dist. engr. CD 5/1.

† **Idaho**—B.A. 9/20—Bureau Reclamation, Dpt. Interior, Central Snake River District Office, 214 Broadway, Boise, Idaho, constr. road surfacing and repair near Anderson Ranch Dam, Boise Proj., about 6 mi. north of Dixie, Spec. 100C-136. CD 9/12/44.

Calif., Los Gatos—B.A. 9/24—City, city clk., City Hall, grading, draining, surf., Montgomery, Andrews, Thurston and Olive Sts., and University Ave., $72,000. CD 3/12/46.

† **Idaho**—B.A. 9/27—Bureau Reclamation, Dpt. Interior, Lewiston Orchards Irrigation Dist., 1520 Powers Ave., Lewiston, Idaho, constr. fencing and operator's house at Water Treatment plant, Lewiston Orchards Proj., about 9 mi. southeast of Lewiston, Spec. No. 100C-135. CD 9/12/44.

SOON LETS CONTRACT—HEAVY CONSTRUCTION

Utah—RURAL DISTRIBUTION LINES—Moon Lake Electric Assoc., Altamont, Utah, soon lets contract, 38.8 mi. kv transmission line, incl. poles, pole line, hardware, conductors, cross arms, insulators, etc. line to extend from Rangely to two Utah sub-stations at Jensen and Lapoint. Louis Reese, mgr., Altamont, Utah. CD 7/23.

BIDS ASKED—BUILDINGS

Calif., Los Angeles—WAREHOUSE—B.A. 9/12—City Harbor Dpt., City Hall, 150x500 ft., steel frame, stucco cotton warehouse. Approx. $82,000. Plans deposit $25. E. C. Earl, engr. CD 5/27/49, under Unclassified.

Wash., Silverdale—SCHOOL ADDN.—B.A. 9/12—Central Kitsap School Dist. 401, Silverdale, 2 story 62x50 ft., steel, masonry high school addn., $300,000. Plans deposit $25. Branch & Branch, 2616 E. 11 St., Bremerton, archts. CD 6/27.

Wash., Bremerton—SCHOOL—B.A. 9/13—School Dist., 100-C Bremerton, 1 story 28,881 sq. ft., rein.-con. elementary school on Marion Ave. $330,000. Plans deposit $25. Branch & Branch, 2616 E. 11 St., Bremerton, Wash., archts. CD 6/11.

Calif., San Francisco—CAFETERIA—B.A. 9/19—Dpt. P. Wks., City Hall, new cafeteria bldg. at Guadalupe School. CD 11/17/48.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., cancelled bids to have been opened Sept. 11, hydraulic turbines for American Falls Power Plant, Minidoka Proj., Spec. DS 3487, IDAHO. CD 8/1.

† **W. W. Clyde & Co.,** Springville, Utah, CA. **$144,054,** street paving and drainage, area "D" Dugway Proving Grounds, TOOELE, UTAH. U. S. Eng., 74 New Montgomery St., San Francisco, Calif. Bids Aug. 16. CD 8/2.

† **W. W. Clyde & Co.,** Springville, Utah, LB. **$61,715,** construct runway lights, connecting power cable, concrete vault, electric service, flood lights, control equip., beacon tower, misc. items. Dugway Proving Grounds, TOOELE, UTAH. U. S. Eng., 74 New Montgomery St., San Francisco, Calif. Bids Aug. 14. CD 8/7.

† **Allis-Chalmers Mfg. Co.,** 1126 S. 70 St., Milwaukee, Wis., CA, **$184,291,** Sch. 1.

General Electric Co., Luhr Tower, Phoenix, Ariz., CA, **$65,141,** Sch. 2, transformers, auto transformer, circuit breaker, Prescott Substation, Davis Dam Proj., Spec. 3065-26, ARIZONA Bureau Reclamation, Dpt. Interior, Phoenix, Ariz. Bids June 6. awarded Aug. 17. CD 5/23.

Hopper Concrete Pipe Co., 2025 S. Seventh St., Phoenix, Ariz., CA, **$44,037,** concrete pipe, underground irrigation system, PHOENIX, ARIZ., Sun View Improvement Dist., Court House, Phoenix, Ariz. Awarded Aug. 18.

▲† **Peter Kiewit Sons Co.,** 1300 Aloha St., Seattle, Wash., CA, **$1,358,041,** est. $1,494,585, earthwork, structures for Potholes East Canal, Station 1370 plus 50 to 2489 plus 41.75; Ringold Wasteway, Station 0 plus 00 to 240 plus 20 and lateral PE-47, Station 0 plus 00 to 2 plus 29. 88, Columbia Basin Proj., Spec. DC-3494. WASHINGTON. Bureau Reclamation, Dpt. Interior, Ephrata, Wash. Bids Aug. 8, awarded Aug. 22. CD 8/21, under LB.

† **C. B. Campbell, Inc.,** 104 Lakeside Ave. and **Atherton and Son, Inc.,** Terminal Sales Bldg., Seattle, Wash., CA, ground system, communications control link bldg., etc. at Jim Creek Naval Communications Station, ARLINGTON, WASH. Yards & Docks Annex, Navy Dpt., Arlington, Va. CD 7/3/47.

C & E Constr. Co., Yakima, Wash., CA. **$101,098,** est. $98,070, LCRP No. 422, grading, draining, ballast and surf. 3.4 mi. Keys and Riverside Rds.; CRP 435 grading, draining, ballast and surf. 3 mi. Dekker Rd. northwest of Sunnyside, YAKIMA, WASH. Yakima Co. Court House, Yakima, Wash. Bids Aug. 24.

† **Oregon**—U. S. Eng., Pittock Block, Portland, Ore., **Cormo Gilo,** Mehama, Ore., LB. **$551,617.** 10 mi. County Rd. No. 360, CIVENG 35-026-52-33, Lane Co. Bids Aug. 23.

† **OREGON**—Bureau P. Rds., Dpt. Commerce, Morgan Bldg., Portland.

Lee Mortensen, Inc., Roseburg, Ore., LB. **$312,523,** Jackson Creek forest development road, Douglas Co. Bids Aug. 23. CD 8/13.

† **OREGON**—Bureau P. Rds., Dpt. Commerce, Morgan Bldg., Portland, Ore.

Hartley & McKee, 1427 24 St., Seattle, Wash., CA **$112,448.** Timber access road 6 mi., Malheur Natl. Forest, Harney Co. Bids Aug. 23.

OREGON—State Hy. Comn., Highway Bldg., Salem.

Snook Bros., 329 N. 18 St., Corvallis, Ore., CA, **$72,418.** 3 span concrete viaduct, Nehalem River, Columbia Co.

C. J. Eldon, Box 5686, Portland, Ore., CA. **$192,878,** Santiam River Bridge, Marion Co. Grand total $265,296. Bids Aug 21. CD 8/10.

OREGON—State Hy. Comn., Highway Bldg., Salem,

Warren Northwest, Inc., Box 5072, Portland, Ore., CA **$156,259,** grading, paving 1.82 mi. Wilson River Hy., Washington Co.

T. W. Thomas, 10248 N. E. Holladay St., Portland, Ore., CA. **$131,663,** grading, paving 0.92 mi. Pacific Hy. Josephine Co. Grand total $287,922. Bids Aug. 21. Awarded Aug 21. CD 8/10.

OREGON—State Hy. Comn., Highway Bldg., Salem, rejected bids Aug. 21, grading, and cinder surf. 12.37 mi., 150 ft. concrete bridge, Klamath Lake Hy. LB. **$495,810,** Klamath Co. CD 8/10.

OREGON—State Hy. Comn., Highway Bldg., Salem,

Grimstad & Vanderveldt, Box 327, Astoria, Ore., CA, **$417,656,** grading 2.28 mi., 100 ft. concrete structure, surf. 2.47 mi., Cannon Brach-Arcadia sect. Oregon Coast Hy., Clatsop Co. Bids Aug. 20. Awarded Aug. 20. CD 8/10.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles, Calif.

Frederickson & Kasler, 212 13 St., Sacramento, Calif., CA, **$2,007,573,** grading, surfacing 9.3 mi. 4 reincon. bridges etc. between 6 mi. north of Devere and 2 mi. south of Gish Underpass, San Bernardino Co. Bids Aug. 2, awarded Aug 21. CD 8/9, under LB

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles, Calif.

United Concrete Pipe Corp., Box 425, Baldwin Park, Calif., CA, **$2,537,790,** grading, paving, 4 grade separation structures etc. 2 mi. between Todd Ave. and .2 mi. southeast of Lakewood Blvd., Los Angeles Co. Bids July 26, awarded Aug. 21. CD 8/3 under LB.

CALIFORNIA—State Div. Hys., P. Wks. Bldg., Sacramento, Calif.,

Madonna Constr. Co., P. O. Box 910, San Luis Obispo, Calif., LB, **$63,876,** rein.-con. slab bridge across Los Berros Creek 2 mi. south of Arroyo Grande, San Luis Obispo Co. Bids Aug. 22. CD 7/30.

CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles, Calif.

Osborn Co., 3200 Edgecliff Lane, Pasadena, Calif., LB. **$187,907,** grading, paving rein.-con. girder bridge 3.5 mi. between Palmdale and 2 mi. east of Llano, Los Angeles Co. Bids Aug 23. CD 7/30.

CALIFORNIA—State Div. Hys., P. Wks., Bldg., Sacramento, Calif.

L. Biasotti & Son, P. O. Box 587, Stockton, Calif. LB **$140,152,** grading, surfacing 3.9 mi. Fresno-Coalinga Road between Coalinga-Mendota Rd. and Ford Ave., Fresno Co.

A. J. Raisch Paving Co., 900 W. San Carlos St., San Jose, Calif., LB, **$99,802,** wid'n. surf. 1.5 mi. between south city limits of San Jose and Tully Road, Santa Clara Co.

Arthur B. Siri Inc. and E. A. Forde, 1357 Cleveland Ave., Santa Rosa, Calif., LB, **$236,387,** grading, surf. 4.9 mi. Purple Draw and .9 mi. east of Santa Rosa and between Cotati and Sebastopol, Sonoma Co. Bids Aug. 22. CD 7/30.

† **Campbell Constr. and Equip. Co.,** 465 10 St., San Francisco, Calif., LB, **$269,446,** additional water supply at Benicia Arsenal, 1800, BENICIA, CALIF. U. S. Eng., 180 New Montgomery St., San Francisco Calif. Bids Aug. 21.

A. D. Schader Co., 164 Spear St., San Francisco, Calif., CA, **$139,054,** installing railroad trackage and earthfill at Pier D; Bids Aug. 16, awarded 21;***United Constr. Co., Box 1887, Long Beach, Calif., CA, **$70,884,** marginal wharf at Berth 28, Pier D, Bids Aug. 15, awarded Aug. 21; LONG BEACH, CALIF. City Harbor Comrs., 1333 El Emabarkadero, Long Beach, Calif. R. R. Shoemaker, harbor engr. CD 2/6/44.

Robert Vlacich, 2901 Worthen Ave., Los Angeles, Calif. LB, **$158,407,** sanitary sewers in El Molino Ave., C. I. 1258, Altadena, LOS ANGELES, CALIF. Bd. Supervs., Los Angeles Co., 501 Hall of Records, Los Angeles, Calif. Bids Aug. 21.

O'Connor Bros., 750 Madison St., Red Bluff, Calif. LB **$63,000,** structural steel frame, GRANDSTAND at 30th District Agricultural Assn. grounds, RED BLUFF CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Bids Aug. 21. CD 8/1.

Bob Bosnyak, 3014 Worthen Ave., Los Angeles, Calif., LB **$91,376,** sanitary sewer in Foothill Blvd., other streets, SAN LUIS OBISPO, CALIF. City, City Hall, San Luis Obispo, Calif. Bids Aug. 20. CD 8/7.

M. W. Hongola & Son, P. O. Box 157, Norwalk, Calif., LB **$68,900,** water reservoir, related work at Pacific Colony, SPADRA, CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Bids Aug. 21. CD 8/1.

Trewhitt, Shields & Fisher, 926 Parallel Ave., Fresno, Calif., LB, **$385,000,** sewage and water facilities at Vocational Institution, TRACY, CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Bids Aug. 21. CD 7/24.

† **Pacific Allied & J. F. Cumming,** 245 E. Olive St., Burbank, Calif., CA, **$143,500,** crash truck and FIRE STATION at George Air Force Base, Eng. 04-353-52-4, VICTORVILLE, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Aug. 21, awarded Aug. 21. CD 8/8.

BUILDINGS

LOW BIDS AND CONTRACTS

Dahlgren Constr. Co., 2016 30 Ave., S. Seattle, Wash., CA, **$777,925,** high SCHOOL, PORT ANGELES, WASH. School Bd., Port Angeles, Wash. Bids Aug. 22. CD 8/14.

† **Lewis A. Hopkins Co.,** Yakima, Wash., CA, **$329,813,** est. $395,481, motor repair SHOP, quartermaster warehouse, cold storage bldg. and warehouse as additional facilities Contract F for training center, ENG 45-108-52-24, YAKIMA, WASH. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids Aug. 24. CD 8/14.

Donald M. Drake, Lewis Bldg., Portland, Ore., CA. **$533,250.** HOME ECONOMICS bldg. addns., Oregon State College, CORVALLIS, ORE., State Bd. Higher Educ., University of Oregon, Eugene, Ore., Bids July 23. Awarded July 23. CD 6/27.

Bickford Const. Co., 823 S.E. 28 St., Portland, Ore., CA. **$399,800.** Old Oregon and COMMERCE bldgs. addns., University of Oregon, EUGENE, ORE., Bd. Educ., Eugene, Ore., Bids July 23. Awarded July 23. CD 7/2.

Tom Burns & Co., 2940 S.E. Belmont St., Portland, Ore., CA., **$136,414.** FACTORY, PORTLAND, ORE., Noon Bag Co., N.W. South and 1st Sts., Portland, Ore., Awarded Aug. 19. CD 3/26.

Henry M. Mason Co., 2206 N.W. Thurman St., Portland, Ore., CA., **$250,000.** WAREHOUSE, PORTLAND, ORE., Richard Sundeleaf, Spaulding Bldg., Portland, Ore., archt., Awarded Aug. 19.

Wohl-Calhoun Co., 845 N. Highland St., Los Angeles, Calif. CA, **$205,400,** concrete WAREHOUSE, garages, utility bldg. etc., **COMPTON, CALIF.** Southern California Edison Co., 601 W. 5 St., Los Angeles, Calif.

Wm. P. Neil Co., 4814 Loma Vista St., Los Angeles, Calif., CA, **$122,000** rein.-con. WAREHOUSE, EAST LOS ANGELES, CALIF. Carrier Corp., 1500 Santa Fe. Ave., Los Angeles, Calif. R. F. Campbell, 4814 Loma Vista St., Los Angeles, Calif., archt.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

Alta., Calgary—HANGAR APRON—B.A. 9/10—F. T. Collins, secy., Dpt. Transport, Ottawa, Ont., reconstr. concrete of hangar aprons and parking areas at airport $100,000. Plans deposit $10. CD 3/9/49.

Ont., Leaside—B.A. 9/10—R. V. Burgess, clk., Town, Leaside, 10 to 21-in. diam. sewers, Approx. $60,000. J. F. MacLaren Assocs., 705 Yonge St., Toronto, Ont., engr.

Ont., Shirley Bay—B.A. 9/11—Defense Constr. Ltd., 441 Queen's Quay W., Toronto, Ont., water, electrical sewer and steam distr. system for Defense Research Bd. Plans deposit $100.

Ont., Toronto—B.A. 9/11—L. J. Ferrie, secy., Union Sewerage Comn. of Mimico and New Toronto, extension to sewage treatment plant, incl. clarifier and pumphouse on Algoma Ave., Mimico, Approx. $75,000. Plans deposit $25. Proctor, Redfern & Laughlin, 11 Jordan St., Toronto, Ont., engrs.

Ont., Little Current—B.A. 912—**Dpt. P. Wks.** Hunter Bldg., Ottawa, dredging, Approx. $480,000. R. Blais, c/o owner, engr.

▲ **Ont., Port Arthur**—B.A. 9/12—Secy., Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., dredging 1,150,000 cu. yds. Class "B" material in harbour, Approx. **$1,500,000.** R. Blais, c/o owner, engr.

BIDS ASKED—BUILDINGS

Ont., Toronto—APARTMENTS—B.A. 9/17—Twp., Clk., York Twp., 2700 Eglinton Ave. W., Toronto, Ont. 128 suites in 16 bldgs., 2 story 8 suites each bldg., brick, cinder concrete pensioners apartments, $650,000 Alex Tobias, 269 College St., Toronto, engr. Eric W. Housson, 96 Bloor St. W., Toronto, archt. CD 7/9.

▲ **N. S., Halifax**—QUARTERS—B.A. 9/18—P. J. Mangan, engr., Central Mortgage & Housing Corp., 1032 Gottingen St., Halifax, N. S., DND married quarters 30-units, Project 2-51, Approx. **$1,300,000.** Plans deposit $10.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Russell Constr. Co. Ltd.,** Harbor commission Bldg., Toronto, Ont., Ca, **$1,500,000,** waterworks expansion, 1 story 90x10 ft., filtration plant, 110x240 ft. mixing basin, NEW TORONTO, ONT. New Toronto Public Utilities Comn., 874 Lake shore Rd., New Toronto, Ont. Bids July 23, awarded Aug. 24. CD 7/5.

Sam Cosentino Ltd., 77 Ritchie Ave., Toronto, Ont., LB, **$83,000,** 1,359 ft. 54 in. and 1,249 ft. 48-in. storm sewer, TORONTO, ONT. Scarborough Twp., 2001 Eglinton Ave., East, Toronto, Ont. Bids Aug. 13. CD 8/3.

H. J. McFarland Constr. Co., Ltd., Talbot St., Picton, Ont., LB, **$900,000,** 200x6,000 ft., new hard-surface runway at Downsview Airport, TORONTO, ONT. Dpt. Transport, Hunter Bldg., Ottawa, Ont. Bids Aug. 7. CD 7/30.

BUILDINGS

LOW BIDS AND CONTRACTS

Foster-Wheeler Ltd., 159 Bay St., Toronto, Ont., CA Approx. $350,000, PLANT, EDMONTON, ALTA. Royalite Oil Co. Ltd., 239 6 Ave. W. Calgary, Alta.

Ratcliffe Engineering, 2200 King St. E., Hamilton, Ont., CA, Approx. **$350,000,** 52 HOMES HAMILTON, ONT. Abbotsford Homes Ltd., 2200 King St., E., Hamilton, Ont. Awarded Aug. 20.

▲ **Horton Steel Works Ltd.,** 40 Jennet St., Fort Erie, Ont., and **Toronto Iron Works Ltd.,** 629 Eastern Ave., Toronto, Ont., CA erecting 30 steel tanks, 150,000 barrels each, 150 ft. diam., 48 ft. high oil REFINERY EXPANSION, SARNIA, ONT. Imperial Oil Ltd., 56 Church St., Toronto, Ont. Awarded Aug. 20. CD 11/17.

Lemieux Constr. Ltd., 5420 Pie IX Blvd., Montreal, Que., CA, Approx. **$125,000,** 3 story 50x60 ft., rein.-con. brick, FACTORY and warehouse Park Ave. between Pine Ave. and Prince Arthur St., MONTREAL, QUE. J. E. McComber, furrier, 3412 Park Ave., Montreal, Que. R. Dufresne, 2760 Von Horne Ave., Montreal, Que., archt.

ALASKA

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Haddock Engineers, Ltd. & Assoc.,** Insurance Bldg., Seattle 4, Wash., CA. **4,118,252. est.** $3,708,036, heating and POWER PLANT, Inv. 51-94, WHITTIER, ALASKA. U. S. Eng., (APO 942, c/o PM, Seattle, Wash.) Anchorage Alaska. CD 8/1 under LB.

OFFICIAL PROPOSALS

RATE: THE RATE FOR OFFICIAL PROPOSAL ADVERTISING IS $1.25 PER LINE (OR FRACTION) PER INSERTION.

CLOSING DATE: FRIDAY 10:30 A. M. FOR THE ISSUE DATED THE FOLLOWING THURSDAY.

SEND COPY TO: OFFICIAL PROPOSAL DIVISION, ENGINEERING NEWS-RECORD, 330 W. 42ND ST., NEW YORK 18, N. Y.

Bids: September 12, 1951

New York State Bridges & Highways

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway, Canal and Building Laws, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., easterly standard time on Wednesday, September 12, 1951 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects; Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1				
		G. L. NICKERSON, Dist. Engr., 353 Broadway, Albany, N. Y.				
Albany, Rensa., Greene,	R.C. 51-68	Bridge No. 1, S. H. 5614-5639 Bridge No. 1, S. H. 5716 Bridge No. 1, S. H. 200-721	.....	Painting 4 Bridges	$1,000 Plans $10	$18,000
Greene	W. S. No. 11	Truck Weighing Station Turn-out on Catskill-West Coxsackie, Pt. 2, S. H. 8384	0.21	Asp. Conc. Type 1A Opt.	$750 Plans $10	$13,600
Saratoga, Washington		Bridge No. 1, S. H. 720				
		DISTRICT No. 2				
		L. KETCHUM, Dist. Engr., 109 No. Genesee St., Utica, N. Y.				
Montgomery	FASS51-23	Scotch Bush-Scotch Church Proj. 8362(1)	3.19	Bit. Treated Graded Gravel	$8,000 Plans $15	$157,000
Oneida	FARC51-61	Rome-Taberg, S. H. 563 Proj. F635(5)	2.17	Asp. Conc. Ty. 1A, Opt.	$5,000 Plans $10	$87,000
		DISTRICT No. 4				
		A. R. MULLIGAN, Dist. Engr., Barge Canal Terminal, Rochester, N. Y.				
Monroe	M-51-5	Gates 3 & 4 Barge Canal Harbor Dam, City of Rochester	.....	Construct New Concrete Apron	$2,600 Plans $10	$45,940
Orleans	FASS51-24	S. H. 392—Clarendon-Monroe County Line, Pt. 2, Proj. 8242(2)	2.34	Bit. Mac. Rd. Mix	$6,000 Plans $10	$113,000
		DISTRICT No. 6				
		H. F. BRUMM, Dist. Engr., 30 West Main St., Hornell, N. Y.				
Chemung & Tioga	FARC51-66	Erin-Van Etten-Spencer, Pts. 2 & 3, S. H. 8010-5657 Spencer Village, S. H. 9091 Spencer-Candor, S. H. 845 Proj. F58(3); 8730(2)	5.01	Asp. Conc. Ty. 1A, Opt.	$50,000 Plans $15	$933,000
		DISTRICT No. 8				
		J. S. BIXBY, Dist. Engr., Pleasant Valley Rd., Poughkeepsie, N. Y.				
Orange	W. S. No. 25	Truck Weighing Station Turn-out on Middletown-Bloomingburg, S. H. 5210	0.20	Asph. Conc. Ty. 1A, Opt.	$600 Plans $10	$10,500
		DISTRICT No. 10				
		J. J. DARCY, Dist. Engr., Montauk Hwy. at Little E. Neck Rd., Babylon, L. I., N. Y.				
Nassau	W.S. Nos. 21 & 22	Truck Weighing Station Turn-Outs on Jericho Turnpike, S. H. 9020	0.47	8" Cem. Conc. Pavt. 12' Wide	$2,400 Plans $10	$44,000
Nassau & Suffolk	FARC51-51	State Highways Nos. 9018, 8474, E8438, 8470, E8440, 8444, 8445, 8460, 1841, 8291, 1883, and 1274 Proj. Nos. F541(8); F985(6)	19.10	Landscaping = 17.00 Mi. Landscaping & Misc. Work = 2.10 Mi.	$3,000 Plans $10	$56,000
Suffolk	——	Various Locations in Suffolk County: — Installing Snow Fence & Arresting Beach Erosion	.....	Furnish & Install. Snow Fence & Arresting Beach Erosion	5% of Bid Plans $10	$27,600
Suffolk	——	Beach Protection at Tiana Beach	.....	Hydraulic Fill & Beach Grass Planting	5% of Bid Plans $10	$54,000
Suffolk	——	Beach Protection at Village of Ocean Beach	.....	4 Concrete Block Jetties	5% of Bid Plans $10	$80,000

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Canal and Buildings Laws, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

The minute you seal the envelope you seal the verdict...

NO ONE but a bidder can decide, practically, whether he, or someone else, will be the successful bidder on any contract . . . because it is you — the bidder — who decide what you will charge to do the work. No one can decide that but you. So, you actually "write your own ticket."

NATURALLY, you must deliver certain specified materials and perform definite functions, within a certain time—that much of the job is something over which you have no control. But . . . it is when you begin to plan ways and means of DOING the job that you start to win or lose it. If you can do it more quickly, with less loss of motion, and, possibly, with fewer man-hours to charge against the job—in other words, at a lower cost to you — you will have the "edge" you need to make you the successful bidder.

LOW cost operation is usually the result of a thorough knowledge of the most efficient methods—and the use of modern equipment. You will be well repaid through your reading of ENGINEERING NEWS-RECORD—both editorial and advertising.

OFFICIAL PROPOSALS

Bids: September 17, 1951

State Village for Epileptics

Notice is hereby given that sealed proposals will be received in the office of the Director, Division of Purchase and Property, Room 318, State House, Trenton 7, New Jersey, for the following:

General work, plumbing, heating and ventilating, electric, structural steel and miscellaneous iron work, refrigeration and food service equipment for a new Men's Group, Women's Group and Bergen Group at the State Village for Epileptics at Skillman, New Jersey.

Bids for the above will be received at the office of the Director, Division of Purchase and Property, State House, W. State St., Trenton 7, New Jersey on Monday, September 17, 1951 at one (1:00) o'clock, E.S.T. and will be opened and read immediately thereafter.

Bids must be made on the standard proposal form, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than 5% of the amount of the bid, cash, in the amount of 5% of the bid or a bid bond in the amount of 5% of the bid, and must be delivered at the above place on or before the hour named, as no bid will be accepted after the hour specified. Bids not submitted on the standard proposal form or enclosed in other than special addressed envelopes will be considered informal and will be rejected. The Director reserves the right to reject any and all bids and to award contract in part or whole if deemed to the best interests of the State to do so. The successful bidder will be required to qualify for surety bond in the full amount of the contract, of a company authorized to do business in the State of New Jersey.

Plans and specifications, form of bid, contract and bond for the proposed work are on file and may be obtained upon application to the Director, Division of Purchase and Property, State House, Trenton, New Jersey on deposit of twenty-five dollars ($25.00) for each set; this amount to be refunded to the bidder upon receipt of same in good condition within 30 days after the award of the contract.

DEPARTMENT OF THE TREASURY
Division of Purchase and Property
Fred V. Ferber, Director.

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION, NOTICE IS HEREBY GIVEN that sealed bids on Invitation No. 703S-195, for furnishing control and relay switchboard for Chadron Substation, Transmission Division, Nebraska, Missouri River Basin Project, will be mailed to P. O. Box 280, Casper, Wyoming, or delivered to the office of the Bureau of Reclamation in time for the public opening at 10 a.m., Mountain Standard Time, September 25, 1951, at the office of the Bureau of Reclamation, Reclamation Center, Casper, Wyoming.

Copies of the standard forms and of the invitation may be obtained from the following offices of the Bureau of Reclamation: Avery A. Batson, Regional Director, Building 46, Denver Federal Center, Denver, Colorado; and I. J. Matthews, District Manager, P. O. Box 280, Casper, Wyoming. No charge for copies of the invitation and drawings furnished for bidding purposes; for all other $0.25 per copy, not returnable. Payments should be made by check or money order payable to the Treasurer of the United States.

CONTRACTORS
Watch this Section
for New Projects

Publish your announcement thru the "Proposals Section" of Engineering News-Record and get their bids.

OFFICIAL PROPOSALS

Bids: September 19, 1951

Maryland Road Work

Sealed proposals will be received by the State Highway Department at its offices in Dover, Delaware until 2:00 P. M., E. D. S. T. (1:00 P. M. E. S. T.), September 19, 1951 and at that time and place publicly opened for contracts involving the following approximate quantities:

CONTRACT 1073
MARYLAND LINE TO STATE ROAD
New Castle County
F. A. Projects F-21 (6) and F-39 (9).
C. C. Widening and Hot-Mix Resurface—9.931 Miles.

17,500 C. Y. Excavation
100 C. Y. Excavation
1,000 C. Y. Borrow
500 C. Y. Borrow Pit Stripping
13,000 C. Y. Selected Borrow
770 T. Waterbound Macadam
5,400 C. Y. C. C. Base
39,600 T. Hot-Mix Asphalt Surface
220 C. Y. C. C. Pavement
5,000 S. Y. Patching
70 C. Y. C. C. Masonry
100 S. Y. Waterproofing
4,500 Lbs. Reinforcing Steel
70 Sqs. Wire Mesh Reinforcement
1,000 L. F. 12" R. C. Pipe
1,070 L. F. 15" R. C. Pipe
340 L. F. 18" R. C. Pipe
80 L. F. 24" R. C. Pipe
20 L. F. 36" R. C. Pipe
30 L. F. 48" R. C. Pipe
24 L. F. 12" Cast Iron Pipe
90 L. F. 8" C. M. Pipe
1,800 S. Y. C. C. Gutter
730 L. F. C. C. Parkway Curb
930 L. F. Wood Shoulder Curb
3 Each Catch Basins "PW"
8 Each Catch Basins "B"
5 Each Adjusted Catch Basins
5,500 Lbs. Castings
930 L. F. Wire Rope Guard Fence
10 Each End Post Attachments
L. S. Topsoil
L. S. Seeding
29,500 S. Y. Sodding
11,000 Gal. R. C. 1 Asphalt
11,000 Gal. R. C. 3 Asphalt
450 T. Slag Chips
450 T. Crushed Chips
800 T. Sand
250 Bags Extra Cement
2,400 L. F. Ditching
50 Each Crossable Separators
5 T. Calcium Chloride
690 S. Y. Removal of Pavement
4,000 L. F. Regarding Parkway Ditch

CONTRACT 1075
FELTON TO WOODSIDE
Kent County
F. A. Project S-115 (1)
20' Stabilized Earth and Surface Treated Road 3.835 Miles.

1 A Clearing
1 A. Grubbing
15,500 C. Y. Excavation
18,500 C. Y. Borrow
1,000 C. Y. Borrow Pit Stripping
10,700 C. Y. Selected Borrow
20 C. Y. C. C. Masonry
120 S. Y. Waterproofing
600 Lbs. Reinforcing Steel
600 L. F. 12" R. C. Pipe
350 L. F. 15" R. C. Pipe
160 L. F. 18" R. C. Pipe
130 L. F. 24" R. C. Pipe
112 L. F. 60" R. C. Pipe
70 L. F. 8" C. M. Pipe
30 S. F. C. C. Sidewalk
920 L. F. Wood Shoulder Curb
920 L. F. Wire Rope Guard Rail
4 Each End Post Attachments
600 S. Y. Sodding
26,000 Gal. R. C. 1 Asphalt
26,000 Gal. R. C. 3 Asphalt
1,040 T. Slag Chips
1,040 T. Crushed Chips
8,000 L. F. Ditching
25 C. Y. Rip-Rap
L. S. Removal Present Bridge

These contracts are Federal Aid Projects and the provisions of the Federal Aid Highway Act, as amended, are applicable thereto.

The Employment Agency for these contracts will be the Delaware State Employment Agency whose offices are located at 601 Shipley Street, Wilmington, Delaware, and 307 S. State Street, Dover, Delaware.

Attention is called to the Special Provisions in the proposal, specifications and contract agreement.

Performance of contracts shall commence within ten (10) days after execution of the contracts and be completed as specified.

Monthly payments will be made for ninety (90) per cent of the construction completed each month.

OFFICIAL PROPOSALS

Bidders must submit proposals upon forms provided by the Department.

Each proposal must be accompanied by a surety bond, certified check, or money to the amount of at least ten (10) per centum of the total amount of the proposal.

The envelope containing the proposal must be marked "Proposal for the construction of State Highway Contract No....."

The contract will be awarded or rejected within twenty (20) days from the date of opening proposals.

The right is reserved to reject any or all bids.

Complete sets of plans and specifications may be obtained upon receipt of five dollars ($5.00) for **each set, which** amount will not be refunded.

Make checks payable to the State Highway Department.

STATE HIGHWAY DEPARTMENT
By: J. Gordon Smith,
Chairman
Richard A. Haber, Chief Engineer
August 22, 1951

Bids: September 17, 1951

Water Main Extensions

Sealed proposals, invited by the City of Tullahoma, will be received at the office of the City Recorder, City Hall, Tullahoma, Tennessee until 10:00 A.M., Central Standard Time on the 17 day of September, 1951, at which time they will be publicly opened and read aloud.

The proposed work includes the construction of trunk sewers, relief sewers and water main extensions together with all material and appurtenances necessary for a complete installation. The City of Tullahoma will furnish all cast iron pipe, fittings, hydrants and valves for the water main extensions and cast iron pipe for the creek crossings under Contracts 4, 5, and 6 but the Contractor shall furnish all jointing material and do all work necessary for a complete installation.

The work will be performed under the following Contracts and the bidders must submit separate proposals for such Contract or Contracts as the bidder selects.

Contract 1—New Feeder Main
Contract 2—Bel-Aire Distribution System
Contract 3—Forest Park Water Main
Contract 4—Rock Creek Relief Sewer
Contract 5—Forest Park Trunk Sewer
Contract 6—Bel-Aire Trunk Sewer
Contract 7—Bel-Aire Sewers

Instructions to Bidders, Proposal Forms, Contract, Specifications, Form of Performance Bond and Plans may be obtained from the office of Greeley and Hansen, Engineers, 220 South State Street, Chicago 4, Illinois, or from the office of the City Recorder, City Hall, Tullahoma, Tennessee, on deposit of $10.00, which sum so deposited will be returned in full, if said Contract Documents are returned in good condition within 5 days after the opening of bids.

Proposals must be submitted on the proposal forms included in the Contract Documents, must contain the name of every person interested therein, and must be accompanied by a certified check or checks on a solvent bank or trust company made payable to the City of Tullahoma, in an amount of not less than 5 per cent of the bid, or a bid bond of like amount, on the form included in the Contract Documents, as a guarantee that, if the bid is accepted, the bidder will execute and fill in the proposed contract and bond within 7 days after the award of the Contract.

Bidders engaged in general contracting must be licensed to perform work by the Tennessee State Board for Licensing General Contractors prior to submitting a bid.

The City of Tullahoma reserves the right to reject any or all bids and to waive or not waive any informalities in the bids received.

Acceptance or rejection of proposals will be made as soon as practicable after the bids are received, but the City reserves the right to hold bids for 30 days from the date of opening.

Dated this 27 day of August, 1951.

CITY OF TULLAHOMA, TENNESSEE
By: J. T. Farrar
Mayor

Office of the District Engineer, Corps of Engineers, U. S. Army, 1217 U. S. Post Office and Custom House, St. Paul 1, Minnesota.—Sealed bids, in triplicate, for furnishing all labor and materials and performing all work required for Construction and Delivery of Two (2) Side Dump Scows at the Corps of Engineers Boatyard, Fountain City, Wisconsin, will be received in this office until 11:00 A.M., C.S.T., 4 October 1951, and then publicly opened. Further information upon application.

OFFICIAL PROPOSALS

Bids: October 4, 1951

Bay City Improvements

Construction Of Sewage Treatment Works Including Plant, System Of Intercepting Sewers, River Crossing, Et Cetera, For The City Of Bay City, Michigan, For A Total Cost Of Project Estimated At Approximately 5½ Million, And Ten Construction Contracts As The Maximum Number Possible.

Sealed proposals for the construction of a Sewage Treatment Works, Incineration Equipment, River Crossing And Plant Outfall Tube, Approximately 50,000 Linear Feet Of Intercepting Sewers ranging in size from 15-inches to 54-inches in diameter involving both tunnel and open cut construction, and Diversion And Control Chambers at 45 locations, for the City of Bay City, Michigan, will be received at the office of the City Purchasing Agent, City Hall, Bay City, Michigan, until 8:00 P.M. Eastern Standard Time October 4, 1951.

The successful bidder will be required to furnish satisfactory performance and labor and material bonds, and compensation, public liability, and property damage insurance as specified.

Proposals shall be accompanied by a bid deposit as specified and made on the proposal forms included with the specifications and other documents.

Copies of the plans, specifications, and other documents may be obtained from the office of The Francis Engineering Company, 301-305½ Eddy Building, Saginaw, Michigan, upon application accompanied by a check in the proper amount made payable to The Francis Engineering Company, all of which will be refunded provided a bona fide bid is filed and plans, specifications, and other documents are returned in good condition within ten days after the opening of bids. Otherwise there will be no refund. The schedule of deposits for plans is as follows:—Sewage Treatment Works $60.00; Incineration Equipment $50.00; River Crossing And Plant Outfall Tube $25.00; Intercepting Sewers $50; and Diversion And Control Chambers $25.00.

The City of Bay City reserves the right to reject any or all bids and to waive any informalities in bids, and to hold proposals for a period of thirty (30) days, during which time bidders may not withdraw their proposals.

This advertisement is a summary of the five official advertisements which will be mailed gratis upon request and carry more detailed information.

City Of Bay City, Michigan
By Elford A. Cederberg—Mayor
By Charles W. Kindermann
City Purchasing Agent.

August 13, 1951

Bids: September 14, 1951

Substructure For Bridges

DELAWARE RIVER
JOINT TOLL BRIDGE COMMISSION
526 Broad Street Bank Building
Trenton 8, New Jersey

Sealed proposals for the construction of the substructure for three (3) bridges over the Delaware River, between Pennsylvania and New Jersey will be received by the Delaware River Joint Toll Bridge Commission at its office, 526 Broad Street Bank Building, Trenton 8, New Jersey, until eleven o'clock (11:00) A.M., Eastern Standard Time, on the 14th day of September, 1951, at which time and place all bids will be publicly opened and read aloud.

After August 15, 1951, Instructions to Bidders, form of Proposal, form of Contract, form of Performance Bond, Plans and Specifications may be examined at the office of the Commission, above address, and copies thereof obtained upon payment of $10.00 for each set, which amount is not returnable.

The names, location and approximate quantities of major items for the three bridges are as follows:

Contract No. 101—Delaware Water Gap Bridge, between Delaware Water Gap, Pennsylvania and Warren County, New Jersey.

Dry and Wet Excavation	27,500 C.Y.
Rock Excavation	8,000 C.Y.
Concrete	18,000 C.Y.
Reinforcing Steel	1,800,000 Lbs.
Granite Facing	1,700 C.Y.
Riprap	11,000 Tons
Driving Steel Bearing Piles	52,600 L.F.

Contract No. 201—Portland-Columbia Bridge, between Portland, Pennsylvania and Columbia, New Jersey.

Dry and Wet Excavation	12,500 C.Y.
Concrete	4,700 C.Y.
Reinforcing Steel	405,000 Lbs.
Granite Facing	385 C.Y.
Riprap	1,300 Tons
Driving Steel Bearing Piles	2,200 L.F.

Contract No. 301—Milford-Montague Bridge, between Milford, Pennsylvania and Montague, New Jersey.

	Alternate A	Alternate B
Dry and Wet Excavation	3,800 C.Y.	2,900 C.Y.
Rock excavation	400 C.Y.	400 C.Y.
Concrete	5,400 C.Y.	4,700 C.Y.
Reinforcing Steel	300,000 Lbs.	268,000 Lbs.
Granite Facing	1,150 C.Y.	1,150 C.Y.
Riprap	1,300 Tons	1,000 Tons
Drilled-In Caissons		1,480 L.F.

Proposals may be submitted for the substructure for each bridge separately, for two bridges combined or for all three bridges combined.

Each Proposal must be accompanied by a certified check in the amount of not less than five (5) percent of the amount of the Proposal.

If the bidder submits Proposals for more than one contract, a single certified check in the amount of not less than five (5) percent of the largest amount of work included in a combination of proposals, will be sufficient.

All checks shall be made payable to the Delaware River Joint Toll Bridge Commission, which amounts shall be forfeited as liquidated damages if the bidder or bidders fail, within ten (10) consecutive calendar days after written notice that the bidder or bidders have been awarded the contract, to enter into a written contract with the Commission in accordance with the accepted bid, and to give a Performance Bond satisfactory to the Commission, equal to one hundred percent (100%) of total amount of contract.

The Commission reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work, and to the bidder whose proposal is deemed by the Commission to be most advantageous to the public interest.

DELAWARE RIVER JOINT TOLL
BRIDGE COMMISSION
By Alexander R. Miller
Chairman of Commission

Bids: September 24, 1951

Prison Wing Dormitory

Notice is hereby given that sealed proposals will be received in the office of the Director, Division of Purchase and Property, Room 318, State House, Trenton 7, New Jersey, for the following:

General work, plumbing, heating and ventilating, electric and structural steel for new Dormitory addition (appropriation reads: "Prison Wing Dormitory") at the State Prison Farm at Rahway, New Jersey.

Bids for the above will be received at the office of the Director, Division of Purchase and Property, State House, W. State St., Trenton 7, New Jersey on Monday, September 24, 1951 at one (1:00) o'clock, E.S.T. and will be opened and read immediately thereafter.

Bids must be made on the standard proposal form, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than 5% of the amount of the bid, cash, in the amount of 5% of the bid or a bid bond in the amount of 5% of the bid, and must be delivered at the above place on or before the hour named, as no bid will be accepted after the hour specified. Bids not submitted on the standard proposal form or enclosed in other than special addressed envelopes will be considered informal and will be rejected. The Director reserves the right to reject any and all bids and to award contract in part or whole if deemed to the best interests of the State to do so. The successful bidder will be required to qualify for surety bond in the full amount of the contract, of a company authorized to do business in the State of New Jersey.

Plans and specifications, form of bid, contract and bond for the proposed work are on file and may be obtained upon application to the Director, Division of Purchase and Property, State House, Trenton, New Jersey on deposit of twenty-five dollars ($25.00) for each set; this amount to be refunded to the bidder upon receipt of same in good condition within 30 days after the award of the contract.

DEPARTMENT OF THE TREASURY
Division of Purchase and Property
Fred V. Ferber, Director.

Bids: September 19, 1951

West Atchafalaya Floodway

Sealed bids for furnishing, labor and material and performing all work to construct compacted portion of embankment in high level crossing over the West Atchafalaya Floodway for Guy A. Thompson, Trustee, New Orleans, Texas & Mexico Railway Company, Debtor, between Krotz Springs and Cortableu, St. Landry Parish, Louisiana, requiring approximately 1,280,000 cubic yards of borrow material, will be received by C. S. Kirkpatrick, Chief Engineer, 204 Union Station, Houston, Texas, until 10 A.M., Central Standard Time, 19 September 1951, and then publicly opened. August 22, 23, 24 and 25.

September 16 and 17.

Bids: September 11, 1951

Heating and Ventilating Equipment

CONTRACT 327

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 10:00 A.M., Eastern Standard Time, on Tuesday, September 11, 1951, for Contract 327, for furnishing, delivering, installing and testing heating, ventilating and appurtenant equipment for the Rondout, West Branch and Kensico South effluent chambers, and heating equipment with appurtenances for the drainage chamber at Shaft 13, the coagulating plant at Shafts 17 and the Kensico comfort station, and for performing appurtenant miscellaneous construction, all as set forth in the specifications. The locations of the proposed work are in the Towns of Wawarsing, Ulster county, Carmel, Putnam county and Bedford, North Castle and Mount Pleasant, Westchester County, New York.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of the City of New York, in the amount of ten thousand dollars ($10,000.00) for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety etc., can be obtained in Room 1311, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, RUFUS E. McGAHEN, Commissioners, Board of Water Supply; RICHARD H. BURKE, Secretary.

U. S. Government

MISSOURI RIVER BASIN PROJECT, DESIGN SECTION, CASPER, WYOMING

United States Department of the Interior, Bureau of Reclamation. Notice Is hereby Given that sealed bids on Specifications No. 703C-211 for furnishing labor and materials and performing all work for painting powerhouse, residences, office building, and dormitory at Kortes Dam, Kortes Unit, Wyoming, Missouri River Basin Project will be mailed to Box 280, Casper, Wyoming or delivered to the office of the Bureau of Reclamation in time for the public opening at 10 a.m., Mountain Standard Time, September 18, 1951, at the office of the Bureau of Reclamation, Reclamation Center, Casper, Wyoming.

Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: Avery A. Batson, Regional Director, Building 46, Denver Federal Center, Denver, Colorado; and I. J. Matthews, District Manager, P. O. Box 280, Casper, Wyoming. No charge for copies of the specifications furnished for bidding purposes; for all others $0.25 per copy, not returnable. Payments should be made by check or money order payable to the Treasurer of the United States.

OFFICIAL PROPOSALS
(Continued from opposite page)

Bids: September 11, 1951

Clinton New Jersey Reformatory

Notice is hereby given that sealed proposals will be received in the office of the Director, Division of Purchase and Property, Room 318, State House, Trenton 7, New Jersey, for the following:

General work, structural steel and miscellaneous iron work, plumbing, heating and ventilating and electric work in connection with a Close Custody Unit at the Reformatory for Women at at Clinton, New Jersey.

Bids for the above will be received at the office of the Director, Division of Purchase and Property, State House, W. State St., Trenton 7, New Jersey on Tuesday, September 11, 1951 at one (1:00) o'clock, E.S.T. and will be opened and read immediately thereafter.

Bids must be made on the standard proposal form, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than 5% of the amount of the bid, cash, in the amount of 5% of the bid or a bid bond in the amount of 5% of the bid, and must be delivered at the above place on or before the hour named, as no bid will be accepted after the hour specified. Bids not submitted on the standard proposal form or enclosed in other than special addressed envelopes will be considered informal and will be rejected. The Director reserves the right to reject any and all bids and to award contract in part or whole if deemed to the best interests of the State to do so. The successful bidder will be required to qualify for surety bond in the full amount of the contract, of a company authorized to do business in the State of New Jersey.

Plans and specifications, form of bid, contract and bond for the proposed work are on file and may be obtained upon application to the Director, Division of Purchase and Property, State House, Trenton, New Jersey on deposit of twenty-five dollars ($25.00) for each set; this amount to be refunded to the bidder upon receipt of same in good condition within 30 days after the award of the contract.

DEPARTMENT OF THE TREASURY
Division of Purchase and Property
Fred V. Ferber, Director

Bids: September 24, 1951

Pipes & Fittings for Louisville

Sealed bids will be received by the Louisville Water Company at its office at 435 South Third St., Louisville, Ky., up to 11:00 o'clock A.M., Central Daylight Saving Time, September 24, 1951, on the following contracts:

A. 30" Pipe and Fittings
B. Valves

The plans and specifications are on file and may be examined at the office of the Louisville Water Company.

Plans and specifications may be obtained by depositing Fifteen Dollars ($15.00) with the Louisville Water Company. The deposit will be refunded to bidders who submit a bona fide bid and return the plans and specifications in good condition at the time bids are taken. Additional copies of the plans and specifications for use of subcontractors may be purchased for the same price, with no refund.

Each bidder shall deposit with his proposal a certified check or a bidder's bond in favor of the Louisville Water Company in the amount of five per cent (5%) of his bid, which shall be forfeited in case the contractor fails to enter into a contract with good and sufficient bond within ten (10) days after the contract has been forwarded to him.

No proposal may be withdrawn after the time for opening bids is past.

The right is reserved to reject any or all bids or waive any informality in any bid, and to accept any considered advantages to the Louisville Water Company.

LOUISVILLE WATER COMPANY
By: B. E. Payne
Chief Engineer & Superintendent

Contractors Watch This Section —

for new projects. Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

SEARCHLIGHT SECTION

Classified Advertising

EMPLOYMENT: BUSINESS: **"OPPORTUNITIES"** :EQUIPMENT :USED OR RESALE

UNDISPLAYED RATE

$1.50 a Line, minimum 3 lines. To figure advance payment count 5 average words as a line.
'POSITION WANTED' and Individual Selling Opportunity undisplayed rate is one-half of above rate, payable in advance.
Box Numbers in care of our New York, Chicago and San Francisco Offices count as one additional line.
Replies are forwarded each day as received at each of the offices mentioned without additional charge.

Discount of 10% is allowed if full payment is made in advance for 4 consecutive insertions.

EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

DISPLAYED RATE

The advertising rate $14.25 per inch for all advertising appearing on other than a contract basis. Contract rate quoted on request.
An advertising inch is measured ⅞ inch vertically on one col., 3 col.—3⅝ inches to a page. E.N.R.

New Advertisements received by September 10th will appear in the Sept. 20th issue.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

STRUCTURAL DESIGNERS and Draftsmen for indeterminate Reinforced Concrete and Steel structures, and Architectural designers and Specification Writer wanted by Baltimore consultant. Good salaries, paid overtime and vacations. State education, detailed experience, tentative reporting date and salary requirements in first letter. Reply P-1613, Engineering News-Record.

GRADUATE ACCOUNTANT having responsible experience in Main Office of a building contractor who wants opportunity and future with large established construction firm. Must be capable, industrious and clean record. Reply in detail P-1686, Engineering News-Record.

GRADUATE CIVIL Engineer about 35. Major responsibilities and long range development projects involved. Experienced in highway and runway pavement test section planning and supervision, instrumentation for measuring strains and deflections, data and design analysis, and report writing. Salary open. Give resume of education and experience. Transportation Development Section, Portland Cement Association Laboratories, Skokie, Illinois.

ENGINEER, CIVIL or Mechanical, experienced, for office or field work. Write P. O. Box 1106, Roanoke, Va.

STRUCTURAL ENGINEER: Experienced in steel and reinforced concrete design, for large, well established, Architect-Engineer office in Pacific Northwest. Must be capable of assuming responsibility for design of commercial and industrial buildings. P-1738, Engineering News-Record.

STRUCTURAL STEEL Detail Draftsmen and Checker. All types of Structures. Vacation and bonus plan, group insurance, good working conditions. Only top quality men. Send complete written information. Samborn, Steketee and Associates, 1214 Cherry Street, Toledo 4, Ohio.

Airport Liquid Fueling System specialist available for both consulting, and design. Phone IR 6-3237, Box SS-1831, Engineering News-Record.

CHIEF ENGINEER Wanted. District office of major, nation wide construction company has opening for top flight man. Must be completely familiar with estimating, bidding and cost analysis on both heavy construction and building contracts. Only applicants with proven broad experience will be considered. Age 35 to 50. Location, Pacific Northwest. Salary open. Send photo and complete resume. Box P-1825, Engineering News-Record, 68 Post Street, San Francisco 4, California.

ENGINEERS WANTED—Highway or bridge design experience desirable. Permanent positions. Paid vacation, retirement plan. City of Wichita, Kansas. Apply 305, City Building.

WANTED: CIVIL or Structural engineer experienced in design and detailing of simple steel structures, preparation of job cost estimates, and plant supervision and in fast growing city, 100 miles radius of Birmingham, Alabama. P-1856, Engineering News-Record.

(Continued on the following page)

ENGINEERS
STRUCTURAL - ELECTRICAL AND MECHANICAL
Draftsmen

Experienced Men and Recent Graduates for work on Major Bridge Structures and Expressways.
Location: Harrisburg, Pa.; New Orleans, La. or Philadelphia, Pa.

MODJESKI AND MASTERS
Consulting Engineers
State Street Building Harrisburg, Penna.

DESIGNERS AND DRAFTSMEN
START NOW
To Plan For Your Future!
PERMANENT POSITIONS

at good salaries with all employee benefits, including retirement plan. Location —Phila. Exp. on water works projects desirable but not essential. If you have had exp. on reinforced concrete and structural steel design or piping, submit record of exp., salary requirement and availability.

P-1664, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

CIVIL ENGINEER

with a minimum of 3-5 years experience in the design of sanitary sewers. Must be thoroughly competent to take over the complete design of a sewer system for a population of 60,000 in all details. Work is located at Morrisville, Pennsylvania.

Phone Manhasset 7-0777
C. A. MONROE
1900 Northern Boulevard, Manhasset, N. Y.

WANTED
SUPERINTENDENT & SEWER FOREMAN

6—Experienced Sewer Foremen &
1—Superintendent
6—Shovel Operators
Trenton, N. J., Area—long term job.

UNITED FOUNDATION CORPORATION
680 Lexington Rd., Union, N. J.
Phone: Unionville 2-4257

CONSTRUCTION SUP'T & ENGINEER

Technical college graduate, well-experienced in building construction and installation of equipment; willing to travel to locations in United States. State age, salary expected, experience in detail, and date available to begin to work. Write

Box ENR 1157, 221 W. 41 St. N. Y. 18

WANTED
ENGINEERS & TOP DRAFTSMEN

Tractor or automotive experience preferred. Good opportunity for advancement. Unique profit sharing plan. Housing available.

AMERICAN TRACTOR CORPORATION
Churubusco, Indiana

DESIGNERS — ENGINEERS

The Arthur G. McKee and Company are in need of men with experience as:

STRUCTURAL DESIGNERS
CONCRETE DESIGNERS
ELECTRICAL DESIGNERS
PIPING DESIGNERS
CHECKERS

Men should have experience in Blast Furnace, Steel Mill, Oil Refinery or other heavy structural design.

We pay among the highest rates in the industry. In addition our employees share annually in company profits.

Positions are available in our main offices at Cleveland, Ohio; or our branch offices at Union, New Jersey, and Tulsa, Oklahoma.

Excellent working conditions in modern, well-lighted offices.

Our continuous expansion and growth offers many fine future opportunities for men who desire to develop and advance.

Write

Arthur G. McKee & Co.

2300 Chester Avenue — Cleveland 1, Ohio

ENGINEERS

Chemical - Mechanical - Piping - Process

Long term openings in permanent offices located at Cleveland, Ohio and Frederick, Maryland offering good salary plus overtime (forty eight hour week) for qualified Engineers, Group Leaders and Designers experienced in one or more of the following phases of industrial plant design:

Process Piping	Plumbing	Heating and Ventilation
Instrumentation	Tanks and Vessels	Refrigeration
Process Equipment Layout	Boiler Houses	Sprinklers
Packaging	Plant Layout	Water Treatment
Air Conditioning	Conveyors	

Limited number of openings for Estimators experienced in Mechanical and Chemical installations as well as building construction.

Also have a number of openings in our Cincinnati and New York City offices for similar type personnel.

Excellent working conditions with paid vacations, sick leave plan and participating Group Insurance Program.

Please submit complete resume stating experience, education, salary required and date available to:

The H. K. FERGUSON COMPANY
Engineers and Builders

FERGUSON BUILDING — CLEVELAND 14, OHIO

WANTED
Construction Engineer

(Mechanical or civil) for process plant. Experienced in heavy construction, including buildings, piping, and machinery installation.

ALSO, DESIGN ENGINEER

(Mechanical or civil) for process industry. Familiar in heavy industry plant construction, including design, equipment specifications, and machinery installations.

These positions in a modern, expanding plant in northern Ohio River valley. Attractive insurance and pension plans, desirable community, excellent opportunities for competent men.

P-1782, Engineering News-Record
520 N. Michigan Avenue, Chicago 11, Ill.

PRESTRESSED CONCRETE DESIGNERS

FOR PERMANENT POSITIONS WITH GROWING FIRM

Several Senior designers with minimum of 8 year reinforced concrete and structural design experience as well as Senior and Junior draftsmen.

P-1865, Engineering News Record
330 W. 42 St., New York 18, N. Y.

POSITIONS VACANT
(Continued from preceding page)

ENGINEERS WITH strong structural background in design of bridges and grade separation structures for highways, railways and expressways. Exceptional opportunity offered for qualified men. Remuneration on salary and bonus basis. Applicants are requested to give education and resume of experience, including name of employers. P-1486, Engineering News-Record.

EMPLOYMENT SERVICE

WANTED—ENGINEERS, Designers, Draftsmen-Structural, Piping, M.E., C.E., E.E. and Industrial, also Teachers and Chemists. Cleveland Engineering Agency, 2132 E. 9, Cleveland.

SALARIED PERSONNEL, $3,000-$25,000. This confidential service established 1920, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven.

POSITIONS WANTED

ESTIMATOR: FIFTEEN years experience U.S. and foreign. Thoroughly competent all phases construction of oil refineries, chemical plants, and power houses. Speak Spanish, some Portuguese. PW-1706, Engineering News-Record.

STRUCTURAL STEEL Estimator. Age 35, married. Experienced all type structures. Takeoff and pricing. N.J. or Florida desired. PW-1835, Engineering News-Record.

CONSTRUCTION ENGINEER and Supt., desires permanent connection with contractor. Experienced in Excavation and grading, concrete foundations, utilities and roads. Good Estimator, layout man, planner and coordinator. Executive experience. Salary $150. per wk. Age 45. Vicinity of N. Y. Consider out of town. Box PW-1842, Engineering News-Record.

CONTRACTORS EXECUTIVE Engineer experienced in negotiating contracts and in estimating, planning and managing large construction work wants permanent connection. Exceptionally wide acquaintance among engineers, industrial firms and architects. Interested in construction management for engineers or architects. Will consider trade organizations offering broad opportunity. PW-1662, Engineering News-Record.

STRUCTURAL ENGINEER 38, C.E. Deg. registered. Design and field exp. Now Employed. Desires position in N. Y. or Northern N. J. to combine Field & Office work. PW-1828, Engineering News-Record.

ENGINEER, SANITARY, Civil, grad., 35, married. 12 yrs. experience large civil and military projects with emphasis on design and operation of water and sewage systems and treatment plants. Prefer large degree responsibility. Municipal work acceptable. Consider any location. Adequate salary only. Box PW-1848, Engineering News-Record.

CONSTRUCTION MAN with Engineering and Construction experience wishes foreign construction or allied work. Experience includes grading, buildings, highways, and some railroad and airport construction. 15 years in Spanish Countries, single, age 44, now employed. PW-1740, Engineering News-Record.

SUPERINTENDENT OR General Foreman. Excavations, roads, airports, heavy const. equipment. Fourteen years foreign experience, Latin America, Middle East, South Pacific. Efficient manager & producer. Now available. Box PW-1822, Engineering News-Record.

SUPERINTENDENT: 30 Years with contractors. Concrete frame structures, Schools, Hospitals, Industrial, Power, Sewage, Water treatment plants, Steel and Cement mills. PW-1852, Engineering News-Record.

PROJECT MANAGER-Project Engineer. Heavy Construction. Broad Experience Soft and Hard ground and rock excavation. All types pile and conc. foundations. Underpinnings. All types sheeting. Airfields, tunnels, reinforced concrete, and steel substructures. Handle schedules, procurement, field design, correspondence, supervise subcontracts. PW-1788, Engineering News-Record.

(Continued on page 110)

CONSTRUCTION SUPERINTENDENT
AVAILABLE SHORTLY

Considerable experience construction of industrial plants including chemical and process piping work. Handling large industrial-chemical plant at present for well known company. Good references. Average salary past three years $250.00 week.

PW-1849, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ELECTRICAL ENGINEERS

The Austin Company invites applications from progressive young graduate electrical engineers with two to five years' practical experience in electrical engineering work.

This group will be placed immediately in a training course at our Cleveland Office. Instruction in electrical engineering design for modern industrial plants will be given by our engineering staff and will include a review of the broader phases of our business. Inspection trips will be made to important electrical installations.

Full compensation and reasonable expense allowance will be furnished during the training course.

After completion of this program, engineers will be placed on the engineering staff of one of our eight regional offices.

We have above average working conditions, established vacation and sick leave plans, also paid holidays.

Please give full particulars as to education, experience, and salary desired in first letter.

We also have openings for engineers with long experience in electrical design for large industrial plants.

THE AUSTIN COMPANY, 16112 Euclid Avenue, Cleveland 12, Ohio

Fire Protection ENGINEERING

An expanding field with a top-flight organization.

RECENT GRADUATES

Wanted to train as fieldmen. Send personal resume to:

P-1783, Engineering News-Record
330 W. 42nd Street, New York 18, N. Y.

BUILDING AND PLANT LAYOUT DESIGNER

Permanent opening, upstate New York location. C. E. degree required. Prefer licensed Professional Engineer and land surveyor with about 10 years experience in the design of buildings, plant and building layout, drainage systems, building services and architectural work for industrial plants. Please send brief resume to

P-1858, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

PLANT & MAINTENANCE ENGINEER

Experienced, for work in continental United States. Some travelling necessary. State salary expected, age, experience and date available for work. Write

Box ENR 1159, 221 W. 41 St., N. Y. 18.

PROJECT MANAGERS CONSTRUCTION SUPERINTENDENTS

Project Managers capable of supervising design and construction of multi-million dollar industrial projects required for long term opportunities with established nationally known firm.

Must be experienced in complete supervision of such projects as Power Plants, Paper and Pulp Mills, Chemical Plants, Heavy Manufacturing facilities, etc.

Construction Superintendents with similar experience required for smaller projects.

In first letter, give full details concerning experience and education together with availability and salary requirements. All replies confidential.

P-1844, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

WANTED
EXPERIENCED TOP ESTIMATOR

For concrete bridge construction, sewers, water lines, grading and drainage, bituminous paving and seal-coat. Experience in last two lines not necessary. Must be able to coordinate and supervise projects. Work located in Michigan. Salary open. All replies strictly confidential.

P-1770, Engineering News-Record
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(Continued from page 108)

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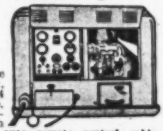

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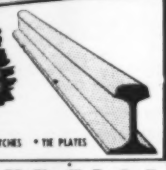

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"Steps Up Schedule Speeds!"

Go modern-

Go Hypoid!

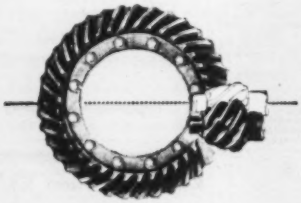
—ON TIMKEN-DETROIT

MEDIUM- AND HEAVY-DUTY AXLES

Today's business man needs—*and demands*—quick delivery of his essential goods and materials! He depends on *you* to do the job economically, dependably and on time! And—thanks to Timken-Detroit Axles with Hypoid Gearing—successful fleet operators are continually stepping up schedule speeds—increasing ton-miles and profits!

The simple, rugged construction of Hypoid Gearing keeps maintenance expense at a minimum—provides plenty of strength and power for long hauls! This modern design of heavy-duty axle gearing has been *proved* by billions of miles of trouble-free operation under all types of load and road conditions!

If you're in the market for new trucks, specify Timken-Detroit Axles and Brakes. You'll find Hypoid Gearing an important Timken-Detroit feature!



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HEAVY-DUTY GEARING

The *offset* Hypoid pinion is bigger and stronger. Bearings are bigger. More teeth are in contact, reducing loading per unit of contact area. Torque-transmitting capacity is increased. Slower gear ratios are practical without loss of strength.

SEND FOR THIS INFORMATIVE ILLUSTRATED BOOKLET ON HYPOID GEARING TODAY! IT'S YOURS FOR THE ASKING!

TIMKEN Detroit AXLES

A PRODUCT OF THE TIMKEN-DETROIT AXLE COMPANY
DETROIT 32, MICHIGAN

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TRADE MARK REGISTERED

WORLD'S LARGEST MANUFACTURER OF AXLES FOR TRUCKS, BUSES AND TRAILERS
PLANTS AT: Detroit and Jackson, Mich. • Oshkosh, Wis. • Utica, N. Y.
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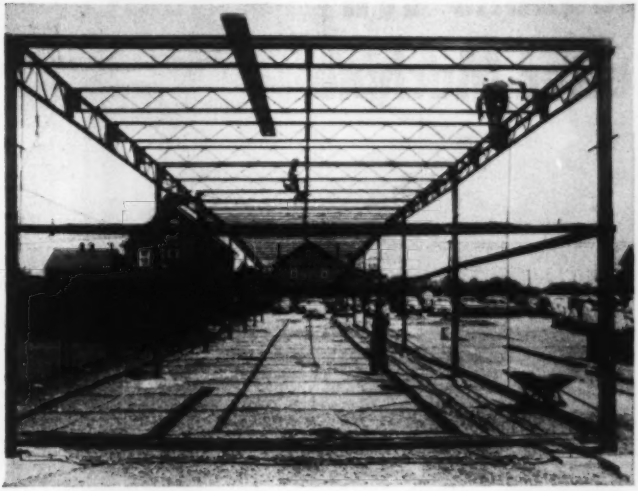
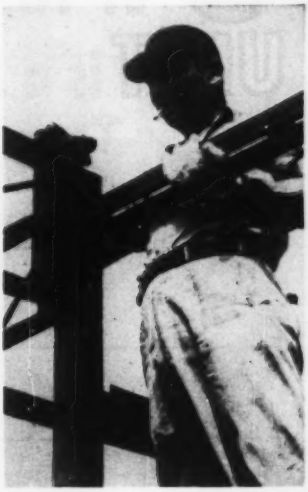
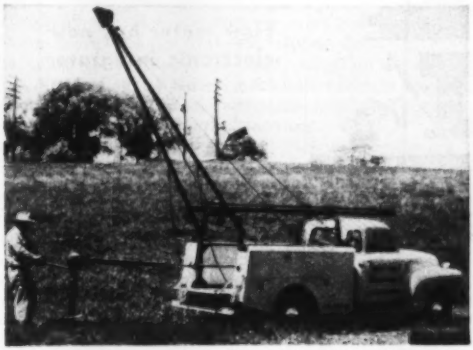
NEW PRODUCTS

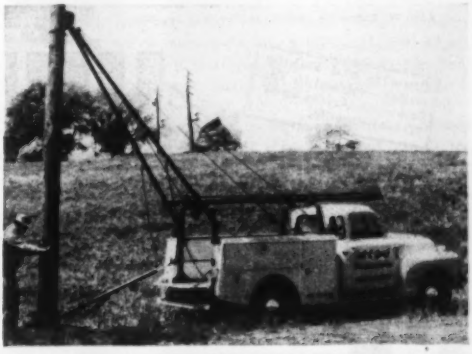




Interlocking steel framing erected without cranes or ladders

Anyone who can put together the side bars and ends of a full-size bedstead can also erect this new V-LOK steel framing, according to the manufacturer. The instantaneous connection requires no bolts, rivets or welding. Telescoping columns are adjusted for correct height (for roof slope etc;), then set up on their steel bases. Steel rods are inserted through holes in these columns transforming each one into a ladder for erection ease. Next a sheave post is set atop each column and a block and tackle hooked on. Two men can then easily raise the 20-ft girders to locking position. After each 20-ft bay is erected, purlins are fastened in similar manner on 5-ft centers, on either or both sides. Finally a bridging member is erected at the center of each bay, locking the roof into a unit. After the frame is up, X bracing and turnbuckles are attached for further rigidity. Manufacturer erected the 20-ft by 120-ft frame shown at left above in 2 hours during one of their many widely separated demonstrations for the armed forces. To reduce weight, all roof framing members are of open web design and the top and bottom chords are made of a patented V section which receives drive nails used to fasten siding, flooring, roofing, insulation materials, etc. MACOMBER INCORPORATED, CANTON 1, OHIO.





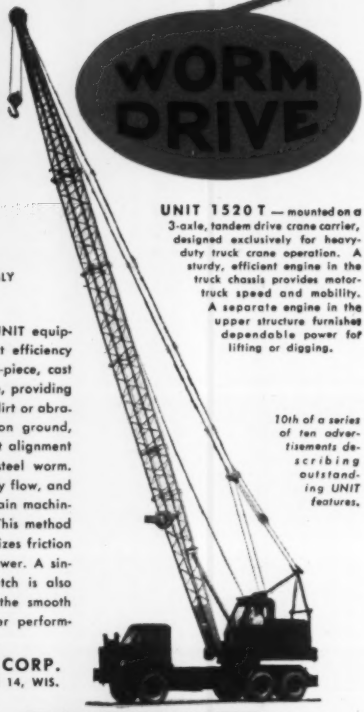
Derrick-digger attachment for ¾- or 1-ton trucks

Requires only two men, and the manufacturer says that in normal soil they need only ten minutes to set up the derrick, attach the digger, bore out a hole and set a pole for tamping. When properly set up after delivery as a unit, the operator sets up the rig with power from its own winch line, then lowers the digger with the same line until it just touches the ground on the spot for boring. He then engages the power take-off shaft to begin digging and, while boring, controls its feed into the ground by slowly paying out the winch line as needed. When stopped, the loaded auger is hoisted free of the hole, spun quickly to throw off the dirt and lowered again for a new bite. Interchangeable augers range from 8 to 20 inches and the rig handles poles up to 35 feet long. TEL-E-LECT PRODUCTS INC., 10049 MINNETONKA BOULEVARD, MINNEAPOLIS 16, MINNESOTA.

1 of 10 Reasons Why UNIT is a Better Machine

UNIT POWER TAKE-OFF ASSEMBLY

WORM DRIVE



UNIT 1520 T — mounted on a 3-axle, tandem drive crane carrier, designed exclusively for heavy-duty truck crane operation. A sturdy, efficient engine in the truck chassis provides motor-truck speed and mobility. A separate engine in the upper structure furnishes dependable power for lifting or digging.

10th of a series of ten advertisements describing outstanding UNIT features.

The power take-off assembly in all UNIT equipment is a complete package of silent efficiency and concentrated power. A rigid one-piece, cast steel case houses the main worm drive, providing positive protection against damaging dirt or abrasives. An accurately cut, and precision ground, bronze worm gear operates in perfect alignment with a hardened and ground alloy-steel worm. Power is transmitted in an even, steady flow, and the reduction from engine speed to main machinery is accomplished in just one step. This method eliminates many wearing parts, minimizes friction losses, and prevents dissipation of power. A single-disc, friction-type, main drive clutch is also housed in this assembly, adding to the smooth flow of power, endurance, and better performance of every UNIT crane and shovel.

UNIT CRANE & SHOVEL CORP.
6315 W. BURNHAM STREET, MILWAUKEE 14, WIS.

Crawler and Mobile models — ½ and ¾ Yd. Excavators. Cranes up to 20 tons capacity.

UNIT

SHOVELS • DRAGLINES • CLAMSHELLS • CRANES • TRENCHOES • MAGNETS

A 5956-½I-C

"Gunite" . . . . . the sand-cement product of the "CEMENT GUN," for Concrete and Masonry Repairs, Pre-Stressed Tanks, Steel Encasement and for lining Reservoirs, Sewers and Tunnels.

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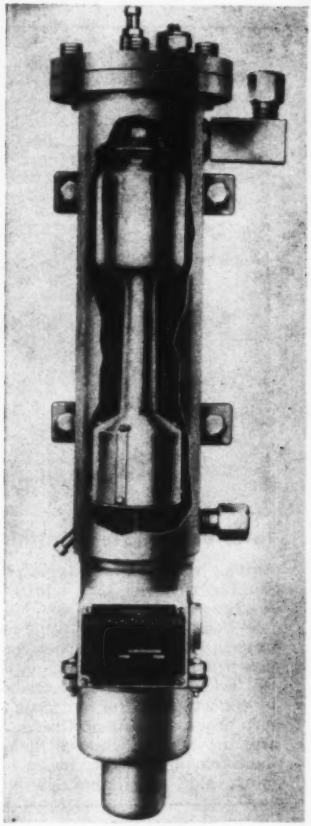
MANUFACTURERS OF THE "CEMENT GUN"

New products . . .

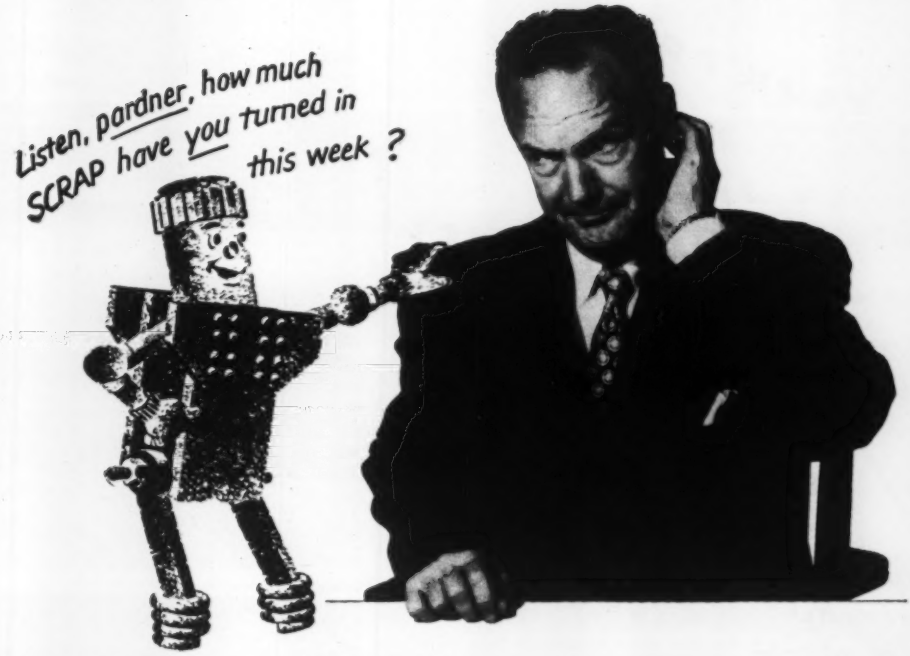


Flow meter has new electronic integrator

Incorporated in the new Brown flow meters is an electronic integrator which considerably simplifies the integrating action in flow measurement, according to its manufacturer. The integrating mechanism has three major assemblies: a scanning unit which checks the flow rate, as evidenced by the meter pen, 12 times a minute, an electronic detector relay which is actuated by the scanning unit and which in turn operates the counter, and finally the counting mechanism which totalizes successive output impulses, thus performing the integration of the flow measurement.

The direct-reading, six-digit counter is driven by a timing motor and its driving gears as designed so that the integrating factor is always a decimal such as 1, 10, 100 or 1/10. Easy removal of the overload-air release assembly and a straight-through drain

(Continued on page 123)



Today, the steel business is your business

—*it needs all your SCRAP, Now!*

SUPPOSE that every steel user were suddenly told that he had to turn in a half-ton of scrap before he could get a ton of steel. It would start the most gosh-almighty treasure hunt for scrap that ever happened.

In effect, this "no-scrap, no-steel" situation virtually exists. For without *all* the scrap that industry can search out and start on its way to the mills, steel production will surely drop. It's as serious as that.

More scrap is urgently needed. Today the mills are turning out more steel than ever before. But they're scraping the bottom of the barrel as far as scrap is concerned. Defense and domestic demands for steel simply cannot be met unless at least 100,000 tons of "purchased" scrap roll into the furnaces—*every day*.

The bulk of this scrap must come from industry. That's why we're asking for your all-out help. That's why it's so important that you make the drive for scrap part of your daily operations. Make it your business to encourage every employee to report any obsolete, broken or worn-out machinery, tool or equipment that has seen its day. From this dormant "junk" must come the heavy melting scrap that the mills need most. Don't let your scrap lie idle; send it on its way. How about it, pardner?

You'll find your local scrap dealers listed in the yellow pages of the phone directory.

This page would ordinarily be used to tell you about

AMERICAN WELDED WIRE FABRIC

but, because without SCRAP we cannot produce steel, we are asking instead for your all-out help in getting more SCRAP to the mills.

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA STEEL COMPANY, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM, SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

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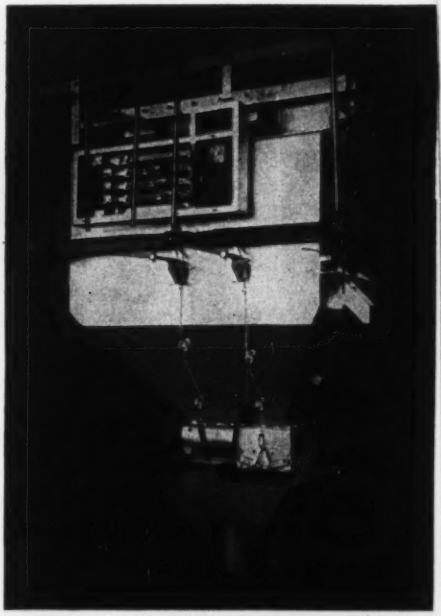
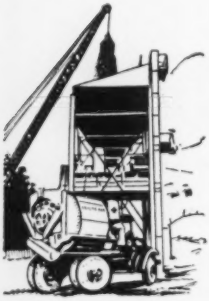
UNITED STATES STEEL

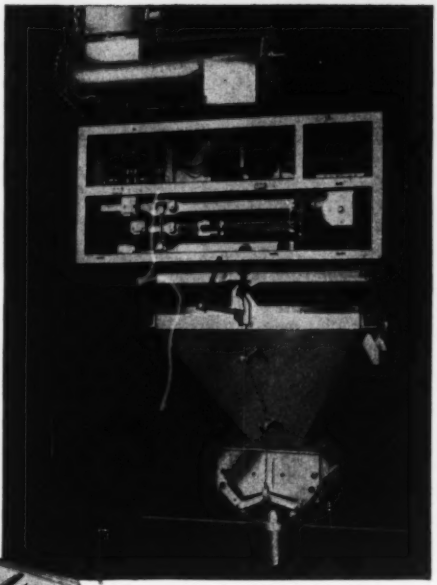
YOUR PROFITS HANG IN THE BALANCE!



A fast, accurate balance in batching for high production is essential to a high profit operation.



And that's another vital advantage in BUTLER Weighing Batchers. Some batcher operators are, of course, better than others. The BUTLER engineer designs weighing batchers to eliminate —just as far as possible—the variations in human skill; in other words, to put the less talented operator on a par with the best. And that to you can mean a substantial extra profit.



For a performance so superior that you'll notice the difference immediately, install the BUTLER Weighing Batcher best suited for your operation. They're adaptable to any plant you have.

BUTLER
Roadbuilders. For complete information on practical, high production BUTLER equipment write for Bulletin 210C.
Ready Mixed Concrete, Central Mixing Plant operators. Write for Bulletin 185. Profusely illustrated. Shows many BUTLER Plants throughout the country and describes their operations.

BUTLER BIN CO.

947 Blackstone Ave.
WAUKESHA, WISCONSIN

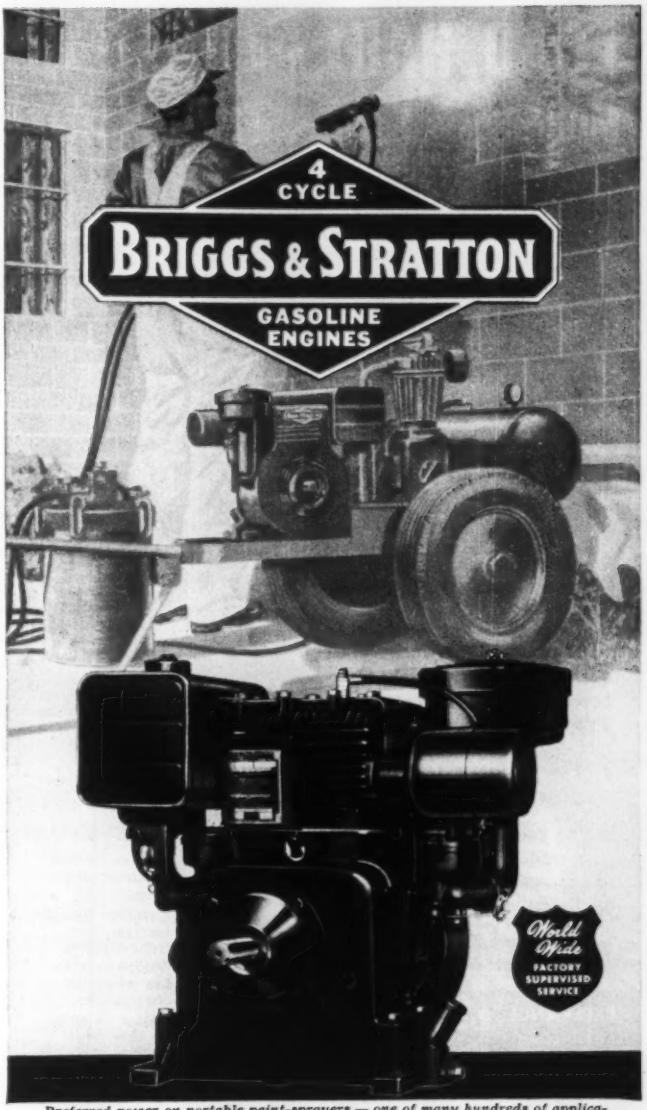
hole in the base of the meter body make cleaning and repair a simple operation. MINNEAPOLIS-HONEYWELL REGULATOR COMPANY, BROWN INSTRUMENTS DIVISION, WAYNE AND ROBERTS AVENUES, PHILADELPHIA 44, PENNSYLVANIA.

Shelf model battery charger

This motor-generator type battery charger can be set up on a shelf measuring only 6¾ by 8¼ in. It's about the size of a tank type vacuum cleaner and weighs 190 lb. It's fully automatic, according to GE engineers, who say that all that's necessary is to plug it in a wall socket and set the timer; automatic controls do the rest. Especially useful for charging batteries in driver-lead and small driver-ride industrial trucks, it accommodates lead-acid batteries of 6-19 cells and nickel-iron-alkaline batteries of 10-30 cells. The single-circuit equipment operates on 3-phase, 60-cycle ac power and has generator and motor overload protectors. GENERAL ELECTRIC COMPANY, SCHENECTADY, NEW YORK.

Portable riveter doesn't hammer—it squeezes

Riveting with this new Guillotine Riveteer is done by a squeezing action rather than the customary pounding on the rivet head. The unit delivers 60,000 lb. thrust through its hydraulic ram, and can drive ⅝-in. cold rivets. It's portable, and according to the manufacturer the entire riveting cycle takes only 2 or 3 seconds. The operator merely presses a hand valve to actuate the ram, and when he releases it, retraction is automatic. Full thrust is delivered over the entire stroke and no adjustment is needed between different length rivets as with air-operated equipment. Modifications are also available for cutting steel bars, wire rope and cable. It can be tied in with all kinds of pump units, including electric and compressed air. MANCO MANUFACTURING COMPANY, BRADLEY, ILLINOIS.



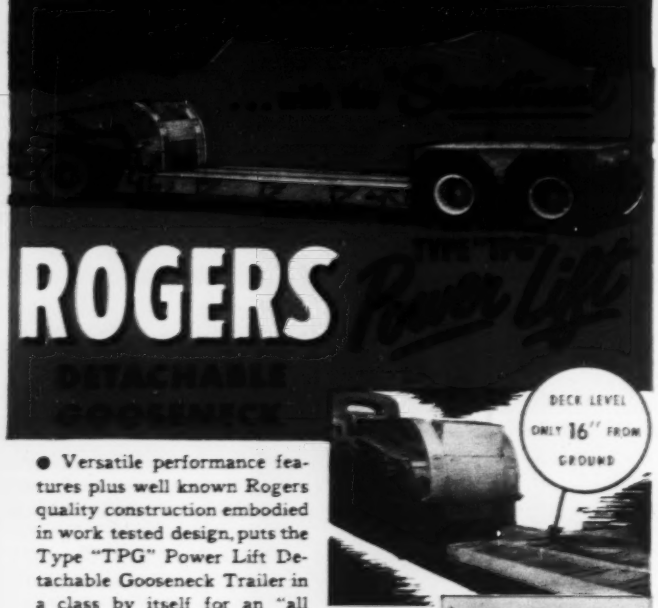
Preferred power on portable paint-sprayers — one of many hundreds of applications on machines, tools, appliances for industry, construction, railroads, oil-fields, and on equipment and appliances for farm and home.

THE sure way to get the best in air-cooled power — insist on Briggs & Stratton, the recognized leader. No other single-cylinder, 4-cycle, air-cooled engines are so universally preferred by manufacturers, dealers and users alike.

Briggs & Stratton Corporation,
Milwaukee 1, Wisconsin, U. S. A.

In the automotive field Briggs & Stratton is the recognized leader and world's largest producer of locks, keys and related equipment.

LOAD, HAUL and UNLOAD
MORE Heavy Equipment IN LESS TIME



● Versatile performance features plus well known Rogers quality construction embodied in work tested design, puts the Type "TPG" Power Lift Detachable Gooseneck Trailer in a class by itself for an "all purpose" single unit.

If you contemplate the purchase of a new trailer, by all means investigate this increasingly popular model. Write for literature today.

THE ROGERS Power Lift DETACHABLE GOOSENECK CAN BE OBTAINED ON ANY STANDARD ROGERS DROP DECK TRAILER

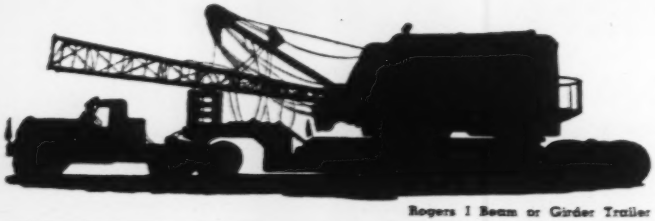
5 EXCLUSIVE ADVANTAGES

1. Carries heavier loads on larger tires.
2. Detaches quickly for fast, easy front loading.
3. Stoops to clear low overhead obstructions.
4. Raises its deck to clear high banked crossings.
5. Is detached, loaded and reattached in 5 minutes.

EXPERIENCE builds 'em ROGERS PERFORMANCE sells 'em

ROGERS BROS. CORP.

ALBION, PENNA.



Rogers I Beam or Girder Trailer

MANUFACTURERS' PUBLICATIONS

Pump motors—Latest in a series of quarterly publications called the "E-M Synchronizer", issue No. 33 deals with large pumps and the application of AC motors to them. Articles cover cooling water pumping, application of large AC motors to centrifugal pumps, powerhouse insulation treatment and the use of variable-speed Magnetic Drive on pumping applications. The 24-page booklet also contains charts, diagrams, photos and much helpful engineering information. ELECTRIC MACHINERY MANUFACTURING COMPANY, MINNEAPOLIS, MINNESOTA.

Hydraulic truck tail gate—Called the Hercules Load-N-Gate, this hydraulically operated lifting gate is the subject of a new illustrated folder. Designed to eliminate physical labor of lifting loads on or off a truck platform, it is available in four sizes for a range of capacities, and apparently easy to install. The platform may be locked at any desired height to match loading platforms, docks, etc. Bulletin No. 2151. HERCULES STEEL PRODUCTS CORPORATION, GALION, OHIO.

Stud welding—Here's a 32-page, pocket-size manual written for the operator personally. Titled "Operating Your Stud Welder," it contains 14 step-by-step photographs explaining just how to stud weld. Other important data include a description of stud welding equipment and accessories, directions for hooking up, approximate generator and timer settings, as well as "Do's and Don'ts of Stud Welding." Write to ENGINEERING DEPARTMENT, KSM PRODUCTS, INC., 6512 PARK AVENUE, MERCHANTVILLE, NEW JERSEY.

Machine Tools and Their Hazards—That's the title of a 34-page bulletin issued by the Department of Labor. "Common as machine tools are, comparatively few data are available as to their inherent hazards" says the foreword of this booklet which is the first of a planned series. It points up general hazards as a group, evaluates the present knowledge of these hazards and suggests what should be done in long-range planning to improve the tools' safety features. Injury statistics on the hazards of machine tools are also included. Bulletin number 129, price 15 cents. SUPERINTENDENT OF DOCUMENTS, U. S. GOVERNMENT PRINTING OFFICE, WASHINGTON 25, D. C.

(Continued on page 127)

THE INSIDE STORY OF LONG ROOF LIFE, LOW MAINTENANCE

When the Sturtevant Air Handling Division of Westinghouse Electric Corp. planned a new warehouse at Hyde Park, Mass., they found they could save substantially on framing by using this strong *yet light* aluminum roofing. Weight is only 56 lbs. per square—see specifications for load-carrying capacity.

Ease of application further lowered initial cost. And the company looks forward to years of *minimum maintenance* with the rustproof, corrosion-resistant metal that needs no painting.

Workers will also find summer temperatures cooler under heat-reflecting aluminum...and lighting will be better under this bright ceiling. In *your* next building these two advantages may be even more important. In *any* building the rustproof permanence of aluminum must save you money.

For literature, technical assistance and application details, call on Reynolds.

• **Offices in principal cities. Check your classified phone book for our listing under "Building Materials," or write: Reynolds Metals Company, Building Products Division, 2005 South Ninth St., Louisville 1, Ky.**

Aluminum is required for planes and other military needs. Reynolds *Lifetime* Aluminum Industrial Corrugated is still produced, but the total supply is necessarily reduced. DO-rated orders receive priority handling.

Specifications for Reynolds *Lifetime* Aluminum Industrial Corrugated:

Thickness .032"
Corrugations 7/8" deep, 2-2/3" crown to crown
Uniform load support (roof) 80 p.s.f. on 4' purlin spacing
Uniform wind load capacity (siding) 20 p.s.f. on girt spacings up to 7'9"
Roofing width 35", coverage 32"
Siding width 33-3/4", coverage 32"
Lengths 5', 6', 7', 8', 9', 10', 11', 12'

REYNOLDS ALUMINUM

REYNOLDS *Lifetime* ALUMINUM INDUSTRIAL CORRUGATED

NEW high-voltage lighting circuits FOR COMMERCIAL BUILDINGS

G-E Remote Control Permits More Economical Combined Power And Lighting Distribution System

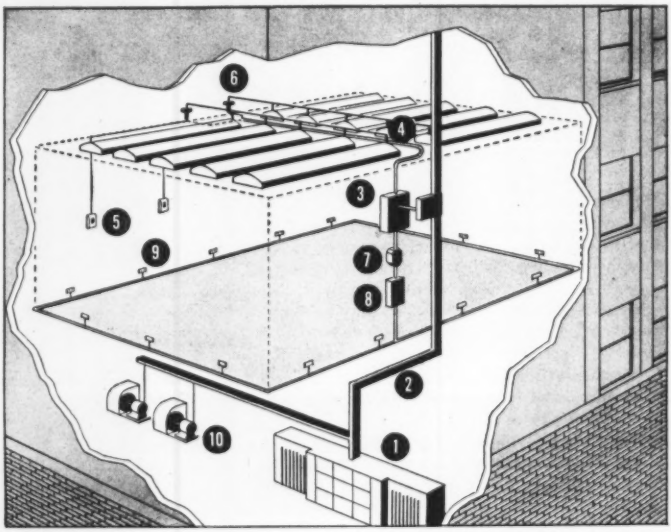
Here's a brand-new distribution-system development which provides outstanding savings to building owners and operators. Now, high-voltage lighting circuits—when safely controlled by G-E low-voltage remote control—can be used in commercial buildings.

Operating fluorescent lamps on 277-volt circuits means that economical 480Y/277-volt combined lighting and power distribution can be employed. Savings are two-fold: (1) much less conductor copper is needed, and (2) less-expensive 480-volt motors and power equipment can be used. In addition, G-E remote control itself adds flexibility, convenience, and economy to your lighting system.

Standard G-E equipment makes application easy. All components for 480Y/277-volt systems, from unit substations to fluorescent lamps, are available in the complete, dependable General Electric line.

G.E. Has the Complete Story

Your G-E representative is ready to supply you complete information. Ask him, or write for a detailed description of the new system together with a listing of the applicable equipment. It's all available in new Bulletin GEA-5670. ***General Electric Co., Schenectady 5, N. Y.***



Here's how the system fits a typical building—Power is received by 480Y/277-volt-secondary equipment ❶. Busway risers (or conduit and cable) ❷ carry the three-phase power to panelboards ❸ in the areas to be lighted. From the panelboards, 277-volt line-to-neutral lighting circuits ❹ are run throughout the area. G-E 24-volt remote control switches ❺ control these circuits through relays ❻ mounted near the lighting fixtures. A 480-120-volt transformer ❼ supplies power to the panelboard ❽ from which floor circuits ❾ are run to accommodate business machines, etc. The same distribution system supplies 480-volt line-to-line power to elevator and air-conditioning motors ❿.

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665-114C

MANUFACTURERS' PUBLICATIONS

Tractor fleet applications—in earth-moving, mining, pipelining, logging and railroad operations are described in a highly-illustrated 8-page mailing piece entitled "International TD-24 Fleets". In addition to pictures and data on the fleet operations, the folder also lists mechanical features of their 148-hp drawbar pull. Ask for Form CR-107-A from any International distributor for from INTERNATIONAL HARVESTER COMPANY, 180 NORTH MICHIGAN AVENUE, CHICAGO 1, ILLINOIS.

Laboratory testing apparatus—Here is a suggested list of apparatus for laboratory tests of concrete and bituminous materials for road testing and airport construction—compiled by CENTRAL SCIENTIFIC COMPANY, 1946 DAILY NEWS BUILDING, CHICAGO 6, ILLINOIS.

Figured glass—is demonstrated in every type of installation imaginable with over 100 photographs in this new, 20-page booklet. Its use for practical modernization in offices, banks, shops, stores, restaurants, make it a valuable addition to any architect's shelf. Specially featured are installations of corrugated glass partitions which insure privacy but permit borrowed light from adjacent offices. MISSISSIPPI GLASS CO., 88 ANGELICA STREET, ST. LOUIS 7, MISSOURI.

Humidity control—The scope of this publication is concerned with too high a humidity, its cause and effects, and what can be done about it—for industry. The 4-page bulletin compares costly air-conditioning which is wasteful where only dehumidification is needed. Company's automatically-controlled heavy duty dehumidifier is shown in cut-out pictures and its workings explained. Entitled "A Few Facts About Dehumidification for Industry," it is available from ABBEON SUPPLY CO., 179-15 JAMAICA AVENUE, JAMAICA, NEW YORK.

Diesel engines—type FV, built in six, eight, twelve and sixteen cylinders—are described in a new comprehensive bulletin showing their use in locomotive service, draglines and electric power generation in industrial plants. Bulletin FV 63 gives complete engineering data, specifications and power ratings, and is available from THE COOPER-BESSEMER CORPORATION, MOUNT VERNON, OHIO.

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Dim prospects for St. Lawrence

Independent action by Canada appears improbable

There is a curious apathy towards the St. Lawrence Seaway in Washington. No longer is there the crusading approach to that subject which characterized the Roosevelt administration. In those days (1941), unusual concessions were made to Canada in order to assure Canadian approval for joint development of the International Section of the St. Lawrence River for power and navigation. (ENR May 22, 1941, p. 824)

Although the 1941 agreement never was approved by Congress, and is now badly out of date in some detail, it still forms the basis for the legislation the Truman administration has tried to get approved by Congress.

When the 1941 agreement was being negotiated, most of the apathy was on the Canadian side of the border. But now even repeated assertions from north of the border that Canada will build the seaway on its own do not stir up any excitement in Washington, although unilateral action would appear to be in violation of the boundary waters treaty of 1909.

• **That treaty** says clearly that neither part may make any "uses or obstructions or diversions, whether temporary or permanent, of boundary waters on either side of the line, affecting the natural level or flow of boundry waters on the other side of the line" unless approved by the International Joint Commission. A modern ship canal that would permit ships of 27-ft. draft to go up and down the river, certainly would require the diversion of more water from the river on the Canadian side than is required for the present 14-ft. canal.

Although American commissioners have not had this question laid before them formally, their attitude at the present time appears to be that if Canada holds that taking water out of the river for the larger canal is not a violation of the treaty, and if the Truman Administration wants to go along with that by-play, the American commissioners will not raise any objections.

Similarly, the unofficial attitude of the Army Engineers appears to be that if the Administration is agreeable to letting Canada build the ship canal on its own, the Army Engineers will not protest, although they have made all the studies and were hoping some day to get the interesting assignment of building the seaway.

All of which leads to the belief that no one in Washington takes the reports from Canada seriously, even though some of them are credited to high government officials.

• **Army Engineers skeptical**—The Army Engineers point out that according to their estimates, the navigation facilities alone will cost $320,000,000, all of which Canada would have to pay if it goes ahead on its own. But if the navigation facilities are built jointly under the 1941 agreement, Canada would pay very little of the cost, which would be borne chiefly by the United States government, because Canada gets credit for its large investment in modernizing the Welland Canal between Lake Ontario and Lake Erie. It hardly seems plausible for Canada to start the project alone under such circumstances, say Army Engineers.

Another reason for surmising that Canadian advocates of the seaway were just bluffing when they made their dogmatic pronouncements about building the canal is the fact that if Canada did undertake to build the canal without the cooperation of the United States government, the canal would have to be so designed that it did not require dams across the international border. That would mean that the power development that is so badly needed by the Province of Ontario would not be built. And as Ontario bears a large share of the expenditures made by the Canadian government, it does not appear reasonable to suppose that Ontario's representatives in the Canadian parliament would approve of any such scheme. Building a canal independent of the power development scheme might result in a much longer delay in getting the power scheme started.

• **Federal power favored**—Before the Public Works Committee of the House voted to table the St. Lawrence resolution, it added an amendment to make the St. Lawrence power development exclusively a federal project. At the time that the 1941 agreement with Canada was being negotiated, the Roosevelt Administration entered into an agreement with New York State, under which New York was to pay the cost of the power facilities on the New York side of the border, and take over operation of those facilities. On the Canadian side, the Hydro-Electric Power Commission of Ontario was to take similar action. While the committee's action is in harmony with President Truman's views, it is believed by many to have materially lessened the chances for any favorable action in the near future on the St. Lawrence project, because it will deprive the project of the backing of the people who are behind the New York State Power Authority.

• **Independent action on power**—Even though the Public Works Committee of the House has tabled the St. Lawrence Legislation, it would be possible—in theory at least—for the power development work to go ahead without any action by Congress. The New York State Power Authority, in conjunction with the Hydro-Electric Power Commission of Ontario could apply to the International Joint Commission for permission to go ahead with the power project, and if approved by the IJC, then the New York State Power Authority could apply to the Federal Power Commission for a permit to build the power facilities on the U. S. side of the border.

But the possibility of such independent action appears very remote. Although the Federal Power Commission is a quasi-independent body, it generally has adhered fairly closely to administration policy. In line with that policy, last December, it turned down New York's application for a license, and it could be expected to take similar action on a later application.

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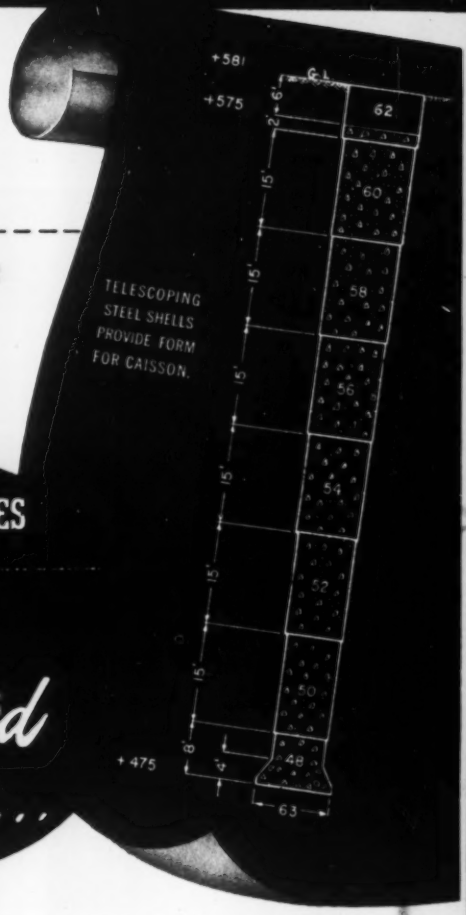

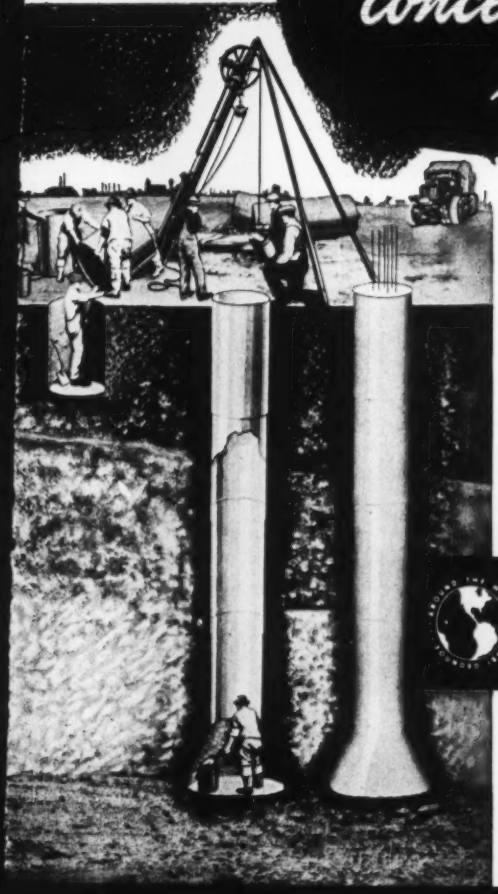

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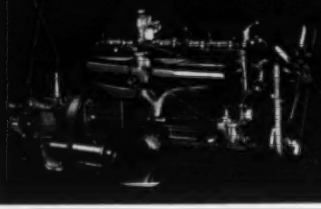

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